

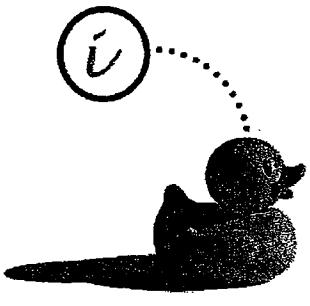
EXHIBIT 1



Damages in Brady et al vs. The Air Line Pilots Association

Rikk M.T. Salamat, BA, MBA
Principal Consultant, Case Lab Inc.

October 12, 2012



Think Information

Section 1 – Rikk. M.T. Salamat

My name is Rikk M.T. Salamat and I reside in Toronto, Ontario, Canada. I did undergraduate course work at the Ontario College of Art and the University of Toronto. I received an HBA from York University in 1994 and an MBA from the University of Toronto in 2003.

I have been the Principal Consultant for Case Lab since 2001. Case Lab is a professional consulting firm that provides economic and financial analysis services for parties involved in disputes. I personally specialize in the analysis of economic and financial data, primarily for professional associations and labour unions, and my CV is set out in Appendix 1. A standard retainer agreement outlining my rates is in Appendix 2.

The majority of my work at Case Lab has been for airline pilots and to date I have worked in either an expert or consultative capacity for the pilots of Canadian Airlines, Air Canada, US Airways, Northwest Airlines, Delta Air Lines, Continental and Trans World Airlines. I have also testified in Canada and the United States as an expert for several pilot seniority integration arbitrations, at the Canadian Human Rights Tribunal, US System Board of Adjustment hearings and in front of the National Mediation Board.

Since 2008, I have been the costing consultant for the US Airline Pilots Association, analyzing the financial impact of proposed contract changes, comparing compensation, and undertaking operational and economic analysis of US Airway and its competitors. In this capacity I have advised union representatives, negotiated with the employer, and have testified as an expert. I was consultant on compensation and wage comparators to the IAMA W during their wage opener with Air Canada in 2006. I was the expert for the Association of Justices of the Peace of Ontario (AJPO) on the impacts of proposed changes to the Ontario regulations regarding compensation for Justices of the Peace and testified before the 5th Triennial Compensation Commission. I was also the Association's expert before the Ontario Superior Court in litigation stemming from Justice's compensation under the amended regulations. I have testified several times between 2010 and 2012 before the National Mediation Board in the United States on matters pertaining to pilot compensation, the costs of provisions in pilot contracts and have presented comparisons in pilot compensation and airline costs between different US carriers. Most recently, in 2012 I was an expert for the Air Canada Pilots Association in the collective bargaining agreement Final Offer Selection Arbitration before Douglas C. Stanley.

A significant part of my practice since 2001 has been in analyzing the impacts of pilot seniority mergers. I developed and programmed an application called the "ALPA Merger Tool," which I have used to analyze impacts during seniority arbitrations, to assist arbitrators in executive session and deliberation, and to produce the final seniority lists in the pilot seniority mergers of Air Canada/Canadian, US Airways/America West, Northwest/Delta and the merged mechanic seniority list in AirTran/Southwest. I have also developed a number of other applications used in both the aforementioned mergers as well as in the mandatory pilot retirement age hearings at the Canadian Human Rights Tribunal and two class actions related to pilot seniority (Addington et al vs. US Airline Pilots Association stemming from the merger of US Airways/America West and Berry v. Pulley stemming from Air Canada/Connectors).

Section 2 – Literature Review and Theoretical Framework

In Patrick Brady et al v. Air Line Pilots Association (ALPA), the jury found that ALPA violated its duty of fair representation to the former pilots of Trans World Air (TWA) and that this violation caused injury to the TWA pilots. Had ALPA not violated its duty the result would have been a more favourable seniority integration than the one that was imposed on them by the Allied Pilots Association (APA), the union which represented the pilots of American Airlines.

The TWA pilots were integrated with the American Airlines pilots under an agreement between the APA and American known as Supplement CC, which included both a merged seniority list and a number of conditions and restrictions. There are two major parts involved in calculating the damages to TWA pilots as a result of the Air Line Pilot Association's (ALPA) violation of its duty of fair representation: The first part of the damage calculation is to estimate the integration that would have occurred absent the violation, and the second is to calculate the financial impact that an alternate integration would have had on the TWA pilots.

A number of actions that ALPA failed to take in representing the TWA pilots were brought out at trial. Had these actions been employed they would have brought pressure on the Allied Pilots Association APA while they negotiated seniority with the TWA pilots. As the APA had some ability to act unilaterally and the TWA had no automatic right to have the matter decided by a neutral party, the effect additional pressure would have had can be considered a problem of increased uncertainty and estimating how the parties, as agents, would have responded and ultimately decided given that uncertainty. A summary of the available actions plaintiffs brought out at trial are seen below in Figure 1.

Figure 1 – ALPA Actions Cited by Plaintiff

Action
Insist on Waiving Scope
Denied April 2001 Legal Strategy: Delay Purchase
Denied July 2001 Legal Strategy: Sue American and APA
Denied October 2001 Legal Strategy: Injunction
Denied October 2001 Legal Strategy: Case, APA Injunction
Refuse to request DOT make fair process condition of purchase
Refuse to request AFL-CIO support
Refuse to block APA pilots from ALPA jumpseats
Deny TWA pilots have right to strike
Failure to Support TWA Pilots
- No coordination with merger committee
- Lack of negotiating support
- Lack of funding
- President's lack of support

From the point of view of the TWA pilots, there were a range of possible outcomes ranging from the least desirable, a list just slightly better than Supplement CC, to an upper limit which is defined as the list an arbitrator would most likely have imposed. The justifications for these being the limits will be discussed

further on. My objective in this matter is to estimate as accurately as possible where in that range an agreement between the TWA pilots and the APA would have fallen given effective representation by ALPA.

There are several theoretical frameworks I have considered and used in order to analyze the effect ALPA's actions would have had on the seniority negotiations between the APA and the TWA pilots and I will begin with a brief survey of the most relevant ones.

The first theoretical approach is that of behavioural theory most closely associated with the work of Walton and McKersie.¹ In their analysis of collective bargaining, they defined four subprocesses of labour negotiations labelled: distributive bargaining, integrative bargaining, attitudinal structuring and intraorganizational bargaining. Distributive and integrative bargaining refer to the processes by which a pie is split (distributive) or grown (integrative) when parties negotiate. Attitudinal structuring refers to balance tactics and reinforcement.

Balance tactics include emphasizing common interests and characteristics; deemphasizing differences; increasing interaction; being responsive to Opponent's problems; conferring status on Opponent; showing appreciation toward Opponent; and dissociating oneself or Opponent from unpleasantness. Reinforcement tactics include rewarding Opponent for desired behavior and punishing undesirable behavior. Attitudinal structuring may also require "working through" old attitudes in order to clear the air for new ones.²

A second framework, also used by Walton and McKersie, has its genesis in the Von Neumann-Morgenstern expected utility theorem³, which "provides the foundation of standard economic models of how people make choices. Implicit in this theory is the assumption that individuals have stable and coherent preferences; they know what they want and their preference for a particular option does not depend on the context. Individuals who face a choice will go through all available alternatives before selecting the one that they judge to be the best."⁴ According to Walton and McKersie, a settlement range is determined by expected utility calculations that weight the benefits of a settlement against the cost of failing to obtain an agreement, particularly a strike in their work.

As Von Neumann-Morgenstern's work launched the field of game theory⁵, some consideration was also given to the Nash equilibrium. As summarized by Roger Myserson:

¹ Walton, R.E. and McKersie, R.B. A Behavioral Theory of Labor Negotiations. New York: McGraw-Hill, 1965.

² Tracy, L. and Peterson, R. A Behavioral Theory of Labor Negotiations: How well has it Aged?, Negotiation Journal, January 1996, 93-108:96.

³ Von Neumann, J., and O. Morgenstern (1944): Theory of Games and Economic Behavior, Third edition, 1953. Princeton, New Jersey: Princeton University Press.

⁴ Hedesström, TM (2006): The psychology of diversification: Novice investors' ability to spread risks, Doctoral Dissertation, Gothenburg University, Sweden, 2006:2.

⁵ Sebenius, J., Negotiation Analysis, From Games to Inferences to Decisions to Deals, Negotiation Journal, October 2009, 449-465.

Nash... formally defined an equilibrium of a noncooperative game to be a profile of strategies, one for each player in the game, such that each player's strategy maximizes his expected utility payoff against the given strategies of the other players. If we can predict the behavior of all the players in such a game, then our prediction must be a Nash equilibrium, or else it would violate this assumption of intelligent rational individual behavior. That is, if our predicted behavior does not satisfy the conditions for Nash equilibrium, then there must be at least one individual whose expected welfare could be improved simply by reeducating him to more effectively pursue his own best interests, without any other social change.⁶

A third framework comes from the field of negotiation and decision analysis and has as its focus actions taken "away from the table." As Lax and Sebenius state:

If one characterizes negotiation as an interactive process by which two or more people seek jointly or cooperatively to do better than they could otherwise, then the "otherwise" becomes crucial. The parties' best alternatives without agreement imply the limits to any agreement. For each side, the basic test of any proposed joint agreement is whether it offers higher subjective worth than that side's best course of action absent agreement. Thus, moves "away from the table" to shape the parties' alternatives to agreement may be as or more important than tactics employed "at the table." Actions of the first type delimit the range of possible agreements; those of the second type influence which point in the range may be chosen. The strategic arsenal from which moves of the second type are drawn includes actions that improve alternatives to the negotiation at hand.⁷

The fourth framework is focused on persuasion and borrows from research on negotiation, decision theory and law. As Scycara states, "[p]ersuasive arguments are used by an agent, the persuader, as a means to dynamically change the utilities associated with various plans and outcomes of another agent, the persuadee, so as to increase the willingness of the persuadee to cooperate."⁸

Behavioural theory, expected utility, game theory and the analysis of persuasion all overlap in some regards. Given the highly specific nature of the damages to the TWA pilots, none of these fields can prescribe an equally specific approach. However, as all these fields attempt to give insight into how parties will behave in negotiations, together they form a body of work from which a reasoned and methodical estimate of the damages to the TWA pilots can be drawn given the assumption that ALPA had not violated its duty.

It is perhaps easiest to begin with strict quantitative approaches to estimating negotiation outcomes of the sort we are concerned with here. Such an approach has two necessary preconditions: probabilities of achieving the minimum and maximum outcomes, and a utility function that would define how agents

⁶ Myserson, R., Nash Equilibrium and the History of Economic Theory, *Journal of Economic Literature*, September 1999, 1067-1082:1069.

⁷ Lax, D.A., Sebenius, J.K., The Power of Alternative or the Limits to Negotiation, *Negotiation Journal*, April 1985, 163-179:163.

⁸ Sycara, K.P., Persuasive Argumentation in Negotiation, *Theory and Decision*, May 1990, 203-242:204

would choose at various points on the continuum between the minimum and maximum. What we can apply from game theory and expected utility is that there are a range of outcomes between a minimum and a maximum, and that given all the probabilities of all the outcomes of the various actions parties could make, there are theoretical optimal outcomes, or Nash equilibria, and that if the parties were aware of these probabilities, and acting perfectly rationally, there would be the basis for an agreement. To mathematically or statistically estimate what that agreement would, however, require subjective judgements about probabilities at each step and, therefore my analysis is primarily dedicated to the examination and development of those judgements, but applying them using other frameworks.

As a result, the theoretical framework for this analysis is concerned with analyzing and estimating the possible results of the actions ALPA did not employ in representing the TWA pilots. Consistent with negotiation analysis as developed by Sebenius and others, my approach "deemphasize[s] the application of game-theoretic solutions concepts or efforts to find unique equilibrium outcomes.... Focus[ing instead] on changes in perceptions of the 'zone of possible agreement' and the (subjective) distribution of possible negotiated outcomes conditional on various actions."⁹

The first actions I consider are the legal strategies ALPA failed to employ and that the TWA pilots and their counsel, Roland Wilder, believed had some chance of success. Whether ultimately they would have worked, had they been pursued, is for others to estimate, but relevant to my analysis is the effect these actions would have had on the negotiation.

These actions would constitute attempts to gain an advantage in distributive bargaining, or gaining a larger piece of the pie. Had ALPA undertaken these actions, the APA would have faced an increased risk that their role in determining the final seniority list would be diminished. This would also transform the negotiation into one with integrative bargaining potential. As the costs of litigation, friction, and disharmony could be avoided through agreement, litigation would have the ironic effect of increasing the potential gains. In combination these two shifts in bargaining would theoretically have increased the incentives for the parties to find an agreement.

Litigation would also have addressed the power asymmetry in the relationship between the APA and the TWA pilots. Again, this is not assuming success in litigation, but is a recognition of the fact that litigation would have changed the APA's perception of the TWA pilots. Power in negotiations, as noted by Rubin and Zartman, is "the perceived capacity of one side to produce an intended effect on another through a move involving the use of resources."¹⁰ As they note, the perception of equal power among negotiators tends to result in more effective negotiations. The salient point for the TWA pilots, however, is that power is not an objective quantity, but as Rubin and Zartman observed in the cases they examined, it is "derived from [parties'] ability to draw on a broad array of resources. Perhaps the major source of power – seen as a means of controlling outcomes – was the ability to bring in support from external actors."¹¹

⁹ Sebenius, 2009, 456-7.

¹⁰ Rubin, J.Z., Zartman, I.W., Assymetrical Negotiations: Some Survey Results that may Surprise, Negotiation Journal, October 1995, 349-364:350.

¹¹ ibid pg. 361.

Naturally, litigation is an example of one ability to draw on resources. However, the perception of the TWA pilots' ability to bring in support from others was compromised considerably by some of ALPA's other actions, or failures to act. For instance, ALPA president Duane Woerth, stating to the APA that the TWA pilots needed to "get real"¹² would have gone some distance to creating the opposite of the perception that the pilots had ALPA's support. Likewise, ALPA's lack of funding for lobbying and negotiations, not making disbursements from the "major contingency fund" as they did for other groups, their lack of negotiating support, and their failure to coordinate with the merger committee all would have contributed to the perception that the TWA pilots did not have external support.

ALPA's refusal to request support from the AFL-CIO takes on particular significance in light of Rubin and Zartman's formulation. A boycott by ten million AFL-CIO members would not only represent significant external support, it would also have involved American Airlines itself in the negotiation. In the same vein, had ALPA requested the Department of Transportation make a fair integration a condition of approving the sale of TWA to American Airlines, this would also have created the perception that TWA pilots could draw external actors into the negotiation context. In keeping with the theme, by denying that the TWA pilots had the right to strike, TWA deprived them of an opportunity to exert pressure on the negotiations via the company.

The "jumpseat war" that ALPA refused to employ would have involved not only the pilots of TWA, but would have seen all ALPA pilots, numbering in the tens of thousands, standing together. This clearly would have brought in other external actors. As a form of coercion, it would also have been a form of "hard distributive" bargaining, one of the classic and most common ways in which parties attempt to gain an advantage in negotiation. It is also a form of reinforcement, punishing undesirable behaviour, from the theory of attitudinal structuring.

Some of these non-litigation actions would certainly have exerted some pressure on the negotiations. More significantly, from the point of view of persuasion, they are all forms of persuasive argumentation that work toward the achievement of an agreement. As Sycara states, "the negotiation process itself is a search of a dynamic problem space where an agents' beliefs about other agents' beliefs and hence feasible solutions continuously change the space being searched. What was not an acceptable solution at one point becomes a solution at a later point."¹³ In the absence of these forms of persuasive argumentation, less favourable agreements, or failed negotiations are the more likely outcomes.

To return to the discussion of litigation, it is also an "away from the table" move, in the language of decision analysis. Since it's an action that attempts to bring other parties into the negotiation, and could potentially supplant the negotiation, it can be treated as a move that is external to the negotiation. "Because improvement in perceptions of one's alternative implies a favorable change in the bargaining range, the ability to affect alternative – and perceptions of them – lies at the root of many conceptions of 'bargaining power.'"¹⁴ For this reason, litigation, in that it creates alternatives, could have competed in

¹² Transcript, V1 pg.46.

¹³ Sycara, 1990:206.

¹⁴ Lax and Sebenius, 1985:171.

importance with moves made in direct negotiations, and would have influenced where in the bargaining range the parties could have agreed.

Another compelling reason to believe that litigation would have had an effect on the outcome of negotiations is that the process would have put an alternate view of "fairness" into the negotiating context. As Lowenstein et al note, "a rich literature in psychology and, more recently, a plethora of experiments conducted by economists testing various game-theory propositions indicate that people are influenced powerfully by considerations of fairness."¹⁵ Litigation would have raised questions about, and forced a broader dialogue about, what would constitute fair treatment of the TWA pilots, whether stapling was fair, and whether the seniority integration process itself was fair. Litigation would force a coherent, explicitly articulated alternative view of fairness to that held by the APA and should, therefore, have influenced the settlement zone. As Lowenstein et al state, "Litigants may not be seeking to maximize their own payoff... but rather may be seeking simply to obtain what they deem fair."¹⁶

To bring together all these theoretical concepts and discuss their application to the calculation of damages to the TWA pilots, it is helpful to first consider the nature of the problem that is before us:

Negotiation is an ill-structured and complex process, that to-date has defied all attempts at analysis. The process incorporates intangibles such as the negotiators' skill and experience, the parties' values, beliefs, perceptions and behaviors. What makes the problem even more complex is the dynamic nature of negotiations. The interaction of the participants during negotiations engenders change in their goals, the ways they perceive the issues, their utilities associated with various outcomes and their reservation prices.¹⁷

Given this above statement and the foregoing discussion of the effects various actions could have influenced the negotiation process, in order to compute the impact of ALPA's violation one must make qualitative and quantitative judgments about how much influence these actions in isolation and in combination would have had on where in the range of possible settlements an agreement could have been formed between the APA and the TWA pilots.

The first step in this process is to define the range of possible outcomes. At the minimum end of the range would be a list that is only marginally, but materially, better than the Supplement CC list that was imposed on the TWA pilots by the APA. As the jury Brady v. ALPA found that ALPA's violation caused harm to the TWA pilots, it must be taken as a foundational part of the analysis that effective representation would have resulted in at least a marginally improved list. At the maximum end of the range would be a list that would be consistent with the decision of arbitrators in pilot seniority mergers. Because some of the litigation and other strategies ALPA failed to employ had at least the potential of compelling arbitration, an arbitrated list is a possible outcome. Additionally, there were strategies and tactics that could have led to an agreement to refer the matter to an arbitrator.

¹⁵ Lowenstein, G., Issacharoff, S., Camerer C., Babcock, L., Self-Serving Assessments of Fairness and Pre-trial Bargaining, *Journal of Legal Studies*, January 1993, 135-159:339.

¹⁶ ibid, 159.

¹⁷ Sycara, 1990:203.

The theoretical frameworks outlined above are consistent with the Jury's decision in that they would all expect that increased pressure from ALPA (in the absence of its violation) would have shifted negotiations in the TWA pilots' favour, producing a more favourable integration. The difficulty is in estimating how much of a shift would have occurred.

To assist in that estimate, a helpful tool used by Sycara is to analyze the goals of the various argumentation strategies that were available. The three goals she outlines are:

1. Change the importance of a persuadee's goal/issue
2. Change the persuadee's perception of an issue's value
3. Pursue goal abandonment on the part of the persuadee via threats/promises

Shown in Figure 2 below, I have characterized each of the strategies ALPA failed to employ according to Sycara's three goals. As should be apparent, the strategies in combination would all be expected to have some impact on the APA's negotiating stance. Some, by their nature, might only have affected one or two negotiating goals, but the compound effect of employing several would lead one to expect a significant shift.

Figure 2 – Impact of ALPA Actions on Negotiations

Action	Δ Importance	Δ Perception	Abandonment
Insist on Waiving Scope		✓	
Denied April 2001 Legal Strategy: Delay Purchase	✓	✓	
Denied July 2001 Legal Strategy: Sue American and APA	✓	✓	✓
Denied October 2001 Legal Strategy: Injunction		✓	
Denied October 2001 Legal Strategy: Case, APA Injunction	✓		✓
Refuse to request DOT make fair process condition of purchase	✓	✓	✓
Refuse to request AFL-CIO support		✓	
Refuse to block APA pilots from ALPA jumpseats	✓	✓	✓
Deny TWA pilots have right to strike		✓	
Failure to Support TWA Pilots	✓	✓	✓
- No coordination with merger committee			
- Lack of negotiating support			
- Lack of funding			
- President's lack of support			

This analysis, combined with my years of experience working with unions, leads me to conclude that effective representation by ALPA could have compelled the APA to move to a position that was consistent with Supplement CC, so that their position and interests were embedded in the agreement, but a position that allowed the goals and objectives of the TWA pilots to be satisfied as well.

To satisfy these competing interests, it is useful to use Lowenstein et al's observation that parties are more motivated by notions of fairness than commonly thought. As such, Albin's analysis of fairness in negotiations can be particularly helpful in attempting to estimate the outcome of APA/TWA pilot negotiations in an alternate version of history. Her study "identifies and analyzes four types of fairness which have an impact on negotiation: structural fairness, process fairness, procedural fairness, and

outcome fairness. In any one case, all four types of fairness will not necessarily be significant nor even present. While concerns about outcome fairness are commonly thought to dominate negotiations, in some contexts no outcome can be quite fair...¹⁸

As such, one would expect that for any list to be considered fair, it would require precedents in the outcomes of negotiations that are perceived to have structural, process and procedural fairness. This most closely describes seniority lists that have resulted either from arbitrations or bi-lateral agreements.

Therefore, in the interest of calculating damages as accurately as theoretically possible, but also as conservatively as possible, I am proceeding with the assumption that the merged seniority list that was most favourable to the American Airlines pilots, but that could be considered reasonable or fair when viewed through the lens of other mergers, would have been the most likely outcome in the absence of ALPA's violation of its duty.

On the one hand, any individual course of action not pursued by ALPA could ultimately have succeeded all on its own. On the other, had all these actions been pursued, there is still the possibility they would all have failed to reach an agreement. It is impossible to say with absolute certainty what the outcome would have been had history been otherwise. In order to establish a probability that ALPA's actions would have produced this outcome, a model was developed based on the assumption that the more of these actions ALPA undertook, the more likely a mutual agreement would have been. As Watkins notes, "To develop dynamic models of negotiation... we must accept that negotiations are strongly nonlinear phenomena... A nonlinear view helps us to understand what causal observation of negotiation processes reveals: movement toward agreement tends to proceed in surges rather than an even flow."¹⁹

A static model of negotiation would consider each attempt at persuasion a discrete event. A dynamic model, such as the one Watkins describes, would take it as given that the combined influence of several actions would be greater than the potential influence of each action in isolation. This suggests that one method for establishing a lower-bound probability would be to use a static model. A dynamic model, such as one with a multiplier, would be a method to establish an upper-bound.

Using Sycara's methodology as a guide as to the relative importance of each type of influence, I developed a static table of probabilities that allow a methodical way to estimate the likelihood that the actions could have had in isolation. For instance, ALPA providing support to the TWA pilots (the last item in the list of actions), would have had the potential to affect some change in the importance the APA placed on one or more issues (such as fences, the value of TWA jobs, etc.). This support, in isolation, may only have had a 3% chance of moving the APA toward an agreement. In combination with the potential to lead the APA to abandon goals (such as stapling), and change their perception of the TWA, support for the TWA pilots might only have had a 10% chance of obtaining an agreement. As shown in Figure 3, by assigning probabilities to each form of influence (Δ Importance was assigned at 3%, Δ Perception at 5% and Abandonment at 2%), a linear model of the impact of ALPA's actions would predict a 73% chance of creating an agreement.

¹⁸ Albin, C., The Role of Fairness in Negotiations, *Negotiation Journal*, July 1993, 223-244:225

¹⁹ Watkins, M., Building Momentum in Negotiations, *Negotiation Journal*, July 1998, 241-256:246

Figure 3 – Linear Model of Probabilities

Action	Δ Importance	Δ Perception	Abandonment	Total
Insist on Waiving Scope		5%		5%
Denied April 2001 Legal Strategy: Delay Purchase	3%	5%		8%
Denied July 2001 Legal Strategy: Sue American and APA	3%	5%	2%	10%
Denied October 2001 Legal Strategy: Injunction		5%		5%
Denied October 2001 Legal Strategy: Case, APA Injunction	3%		2%	5%
Refuse to request DOT make fair process condition of purchase	3%	5%	2%	10%
Refuse to request AFL-CIO support		5%		5%
Refuse to block APA pilots from ALPA jumpseats	3%	5%	2%	10%
Deny TWA pilots have right to strike		5%		5%
Failure to Support TWA Pilots	3%	5%	2%	10%
Total				73%

However, a more dynamic model would use a multiplier such that the compounding effects of multiple actions would be quantified and the effect of momentum on the negotiation would be given a value. As Watkins states, "Regardless of whether negotiations do it by slowly ratcheting up pressure or by establishing specific action-forcing events, the ultimate goal is to build momentum in favorable directions."²⁰

To build a simple dynamic model that would be consistent with the value of sequencing actions and momentum, it is interesting to note that a small multiplier of 1.03 applied to multiple actions would have brought the probability that all actions in combination would have a 100% of success, such that:

$$S \times M^n = 100\%$$

Where:

S=The sum of the probabilities individual actions will influence outcome

M=Multiplier effect

n=The number of actions undertaken

In other words, two actions taken together would be 3% more influential than the sum of their individual impacts and three would be 9% more influential. Even if smaller estimates were used to estimate the impact of individual actions such that there was only a 20% chance, a mere 1.17 multiplier (17% more influential) would still have brought the probability up to 100%. Alternatively, if one used no multiplier at all (M=1), then the total probability would merely be the sum of the individual probabilities.

The choice of 3%, 5% and 2% as probabilities for the various types of impacts are tied to the assumption that the outcome is a fair, negotiated list acceptable to both parties. If one were to assume a significantly worse outcome, such as a list only marginally better than Supplement CC, then those probabilities would require upward revision (since a marginal list would be easier to obtain and require less pressure). Likewise, if the assumption was that the outcome would be more favourable to the TWA pilots, then these probabilities would need to be lowered.

²⁰ Watkins, 2009:243

With that theoretical foundation, the basic preconditions for a merged seniority list and the probability that action would have led to an agreement established, I now turn to an examination of the range of options and the estimate of the seniority list that would satisfy those preconditions.

Section 3 – Determination of Outcome in the Absence of ALPA's Violation

It is difficult to overstate the importance of seniority for pilots as it determines the most important aspects of their working lives including the equipment they operate, whether they are a Captain or First Officer, whether they have a schedule or sit reserve, what days they work, how much time they are away from home, where they live, how many hours they work in a month, when they take their vacation and even what meals they are served on board. In dire circumstances, seniority also determines which pilots are laid off (furloughed) and who retains their jobs.

My objective in this matter is twofold: First, I must estimate what a merged seniority list would have been had ALPA not breached its duty of fair representation. Secondly, I must estimate the damages suffered by the TWA pilots as a result of that list not being implemented.

*What seniority integration would have been
negotiated had ALPA not breached
its duty to the TWA pilots?*

Parties in negotiations typically have starting positions that are subsequently modified over the course of discussions. This movement is the result of a desire not to have negotiations break down, revised understandings of the reasonableness of positions, an appreciation of the other party's interests and the necessity for compromise. This movement can also be the result of pressure from within each negotiating team, from those whom the teams represent and from influence brought to bear from parties not directly involved in the process. In seniority negotiations, these parties can include the company itself, other unions, the Department of Transportation, elected officials, the courts and labour boards.

In most seniority integrations, when negotiations fail to produce an agreement (and most fail), the matter is referred to a neutral party to decide, almost always an arbitrator. In this case, the TWA pilots did not have an automatic right for the matter to be arbitrated and the APA believed it had a contractual right to put every TWA pilot on the bottom of their seniority list, known as stapling. However, there were some limits on the ability to act unilaterally. As they stated:

APA is ultimately the one that will decide the merger. Ideally, you want both sides to agree, and APA has and continues to work to this end. Unfortunately, that has yet to occur. History has shown that we can expect a lawsuit regarding the TWA seniority integration. There was a question from the floor about the word "Fair". Chairman Turcotte replied that there are many flavors of "Fair". There is "Fair" to APA members and a different "Fair" to the TWA members, BUT the only "Fair" that matters is what the Judge decides. Therefore, APA must continue to show good faith during the negotiations.... A question from the floor - "why doesn't APA just

place all the TWA pilots at the bottom of our seniority list from the start?" Chairman Turcotte replied that APA has a legal duty of "Fair Representation" to the TWA pilots.²¹

In addition to the issues the APA mentioned in this report, it can be surmised that American Airlines would have been reluctant to staple the TWA pilots as this would involve significant training costs and operational issues. As a result, the APA was limited in its ability to act unilaterally.

Given that the jury found that ALPA's violation caused harm to the TWA pilots, it must be taken as a basic truth that had ALPA been effective in representing the TWA pilots a better list would have been obtained. This better list could have been the result of negotiation or, alternatively, negotiations could have produced an agreement to refer the matter to an arbitrator. Therefore, there is a range in which the better list would have to have fallen. At one end of the spectrum is a list only slightly better than the one APA imposed, known as Supplement CC. At the other end of the spectrum is a list that might reasonably have been awarded by an arbitrator.

In order to estimate where in this range the TWA pilots would have ended up given effective ALPA representation, I have used what is known as the replication principle. When labour contract negotiations between a union and an employer break down and the matter is referred to an arbitrator for resolution, the prevailing principle arbitrators use is to replicate what the parties, acting reasonably would have agreed to.

In applying the replication principle, an arbitrator's objective is to replicate or construct a collective agreement which reflects as nearly as possible the agreement that conventional bargaining between the parties would have produced had they themselves been successful in concluding a collective agreement. This approach seeks to put both parties in the same position they would have been had there been no breakdown in negotiations.

However, arbitrators try to overcome one serious flaw in this approach; that is, they do not simply want to mirror any great imbalances of power between parties in drafting the terms and conditions of employment. They will attempt to look at other objective criteria - for example, the terms and conditions of employment of other employees performing similar work.

They therefore, in addition to employing the replication principle, impose what they consider to be fair and reasonable terms and conditions. We endorse both these approaches in the determination of first collective agreements.

The replication principle describes the estimation of a collective agreement within the parameters of reasonable expectation emanating from a context where the employer would not have locked out, and the union and employees would not have struck; i.e. where there would have been no

²¹ Boston Domicile Meeting, Friday June 15, 2001, pg. 2.

breakdown in negotiations. The fairness and equity principle is concerned with moderating power imbalances and applying objective criteria. The two principles should apply hand-in-hand.²²

The replication principle, then, offers a valuable practical and philosophical guide to determining what an agreement between the APA and the TWA pilots would have been.

In this case I would argue that the result of ALPA's violation of its duty is that negotiations terminated prematurely. Over several months in 2001, the parties had been moving closer together in their proposals. ALPA's failure to effectively represent the TWA pilots meant that the distance between the parties as of their last proposals could not be further narrowed.

The APA's first proposal in March 2001 was to staple 1,542 TWA pilots and in their final list there were 1,226. The TWA's first proposal saw no TWA pilots stapled and their last proposal saw approximately 209 stapled²³. To begin estimate how far along that divide the APA could have been compelled to move by effective representation on ALPA's part it is required that several different outcomes be considered.

The first outcome that I have analyzed is what would have been fair. Fairness is a subjective concept, and in seniority integration disputes the question of what assumptions form the basis of a model of fairness are hotly contested. Whether one group had superior expectations for the future, whether one group was about to lose all their jobs, how firm aircraft orders were, how much each group is paid, and the relative strength of contracts are all factors that are brought into the discussion of fairness, ultimately leading to theories on how a merged seniority list should be constructed.

For the purposes of this analysis, however, fairness can be more narrowly defined. The damages suffered by the TWA pilots are the result of the difference between their careers under the Supplement CC list and a list that would have been achievable had ALPA not violated its duty, not a list that was "fair."

Nevertheless, a fair list is a necessary reference point for two significant reasons. First, it has to be assumed that the TWA pilots could not have achieved more than what they would have received under a fair list. Second, damages suffered under a fair list is a superior method of allocating damages to individuals, even if it's not the correct method of determining what the damages stemming from ALPA's breach are.

The second outcome is a best guess as to what an arbitrator would have awarded given the facts of the case. If the APA was motivated in part by a fear of an arbitrated list, it must also be the fact that an arbitrated list would be thought safer than a bad negotiated one. Therefore, a likely arbitral award is a necessary reference point because the APA would have been better off agreeing to anything more favourable than it.

Although pilot seniority awards have taken many forms, there are recurring themes in terms of what parties have argued and arbitrators have discussed their relative importance in formulating their lists. The

²² Star of Fortune Gaming Management (BC) Corp v. Teamsters, Local 31 (2001), 2001 Carswell BC 3270, [2001] B.C.C.A.A. No. 293 (B.C. Arb. Bd) 22.

²³ These pilot counts represent the number of pilots who would have been stapled, who would remain as of July 1, 2002.

American/TWA merger was not the first where one airline was in bankruptcy. Nor was it the first where one group claimed that the jobs of the other were redundant, in peril or unneeded. One cannot know for certain what any given arbitrator would have done. However, it can be deduced what a list would look like if an arbitrator was to construct a list as favourable to the APA as any that had ever been awarded or mutually negotiated between parties independently without a neutral arbitrator. Put another way, the best list the APA could have hoped to obtain from an arbitrator must be considered the limit of what the APA would have agreed to. I refer to this outcome as the "Arbitrated List."

The third outcome would be one that is as close to the Supplement CC list as possible, but which is materially, if only marginally, more favourable to the TWA pilots. I refer to this as the "Marginal List."

The list upon which damages are based is the one I estimate would have been the best achievable negotiated list and which I refer to as the "Salamat Damage Model." This list is constructed by reference to the other three and uses the Supplement CC list as its basis. Not undertaking any of the 14 actions listed in Figure 1 had the effect of denying TWA pilots leverage in their negotiations with the APA. Given the discussion on negotiating theory in Section 2, it is reasonable to conclude that had only a few of these options been exploited, the outcome would have been better than the Marginal List. On the other hand, one cannot say for certain that even if all of these had been exploited, the Arbitrated List would have been achievable, even though it would be biased towards the APA.

Therefore, the Salamat Damage Model is a compromise between the Marginal List and the Arbitrated List. This model requires the most thoughtful analysis as there are no hard and fast rules that one can use to determine at what point either party might have walked away from negotiations and, in essence, rolled the dice that the other party's attempts would fail. The APA could, for instance, have hoped that any litigation strategy ALPA could have brought to bear would have failed and therefore, beyond a certain point, the risk would be warranted. The TWA pilots, likewise, could not be assured of any success in court, in compelling compromise from the APA, or in securing a more fair resolution process. Therefore, at a certain point not agreeing to a proposed list would have become riskier than settling.

To return, then, to the replication principle, in order to calculate damages in this case one must answer the following question: Had ALPA provided fair representation and if both parties were acting reasonably, what is the most the APA pilots could have offered and what is the least the TWA pilots could have accepted? "Reasonable", in this context, means that the parties have taken all the risks into account and that their decisions are consistent with the awards and agreements that have resulted from other disputes.

Many more lists were considered in the course of analyzing the damages in this matter, but they were all in some measure variants of the Fair outcome, the Arbitrated List, the Salamat Damage Model and the Marginal list. I will now discuss each of these four lists in more detail.

The Measurement of Fairness

Several tests of fairness are used in assessing the impacts of a merged seniority lists. These can include differences in dates of hire, percentile position, status (i.e. Captain vs. First Officer), equipment (i.e. wide body vs. narrow body) and lifestyle. Most of these tests, however, translate directly into pilots' earning ability and therefore, earnings provide the most comprehensive measure of the relative value of his or her seniority on a list. Due to a myriad of reasons, pay rates are different at different airlines and so one cannot simply use income to measure the value of one pilot's seniority relative to a pilot at a different carrier. As George Nicolau stated in the 2007 award in the seniority merger of the pilots of US Airways and America West, "in prior cases where such differences in pay were greater than they are here, those differences had no real effect on the composition of the list." Thus, income is in no way determinative of the value arbitrators put on pilots seniority relative to pilots of a different airline.

Seniority being the currency with which pilots bid for higher paying positions and lifestyle (base, vacation, schedule, etc.), it is a fact that pilots higher on a seniority list have higher incomes, on average, than pilots lower down. Since good times and bad affect pilots in the same seniority range more or less equally, their incomes will rise and fall, again on average, together.

In April 2002 Supplement CC became effective and the TWA pilots became subject to the collective bargaining agreement between the APA and American Airlines. Figure 4 shows the changes in status between April 2001, when the merger was announced, and July 2002. Statuses are wide-body captain, narrow-body captain, wide-body first officer and narrow-body first officer. Over that time 198 TWA pilots had gone down in position and 310 had been furloughed. Additionally, American closed all pre-merger TWA bases and by April 2002 all TWA pilots were based in St. Louis.

Figure 4 – TWA Pilot Change in Status, 2001-2002

**TWA Pilots Change in Status Between
April 4, 2001 and July 1, 2002**

Total Pilots	2,338	
No Change	1,418	61%
Increased Position	96	4%
Decreased Position	198	8%
Furloughed	310	13%
Retired	171	7%
To Inactive	145	6%

Under the transition agreement between the TWA pilots and American, signed March 31, 2001, American was able to reduce the TWA fleet and adjust staffing in order to rationalize TWA with AMR, to respond to the events of September 11, 2001 and integrate the TWA pilots into the AMR operations. By going a few months into the integrated workforce, it can be assumed that any jobs the TWA pilots still had could

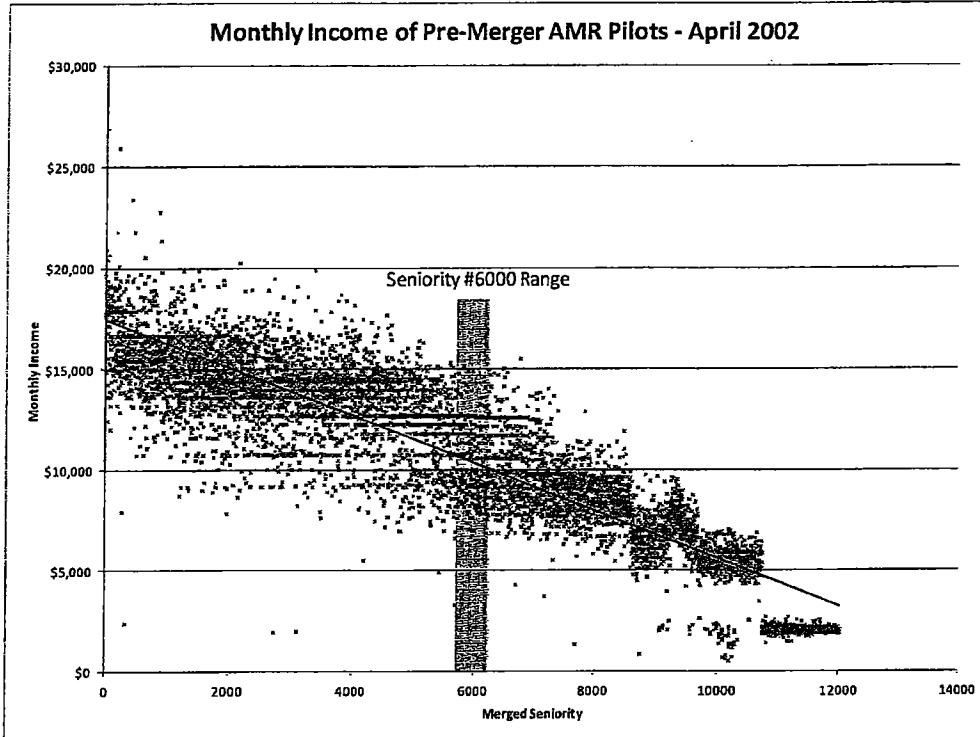
reasonably be considered ones they brought with them. For this reason, July 2002 was chosen as the point in time at which to measure the amount of work available to the TWA pilots.

If, the TWA shakeout and downsizing having occurred, a TWA pilot was earning an average of \$8,000 per month, a fair seniority integration, from an economic point of view, would see him or her rising and falling on the same economic tides as an American pilot earning approximately the same amount. If, after some time, it was discovered that the TWA pilot was earning consistently more than his American economic peers, it would be the result of too much seniority. Alternatively, if it was discovered that the pilot was earning consistently less, then it would be because the pilot had too little seniority.

To analyze what would have occurred to the TWA pilots under a seniority list which placed likes with likes, I constructed a seniority list which places American and TWA pilots on a merged list using an optimizing methodology that creates the closest match in income possible given the constraints of building a merged list.

A given pilot's income is the result of both seniority and what the pilot has chosen to do with it. Therefore, within a small section of a seniority list, there can be a wide range in the incomes of pilots. For instance, Figure 5 shows the monthly income of each American Airlines pilot in April 2002 according to his/her seniority. In the neighbourhood of American pilot at seniority #6000 it can be seen that the average income (as seen on the trend line) is approximately \$10,000 but that some pilots are earning as little as \$7,000 while some are earning as much as \$15,000.

Figure 5 – Scatter Plot, Income vs. Seniority, Linear Trend



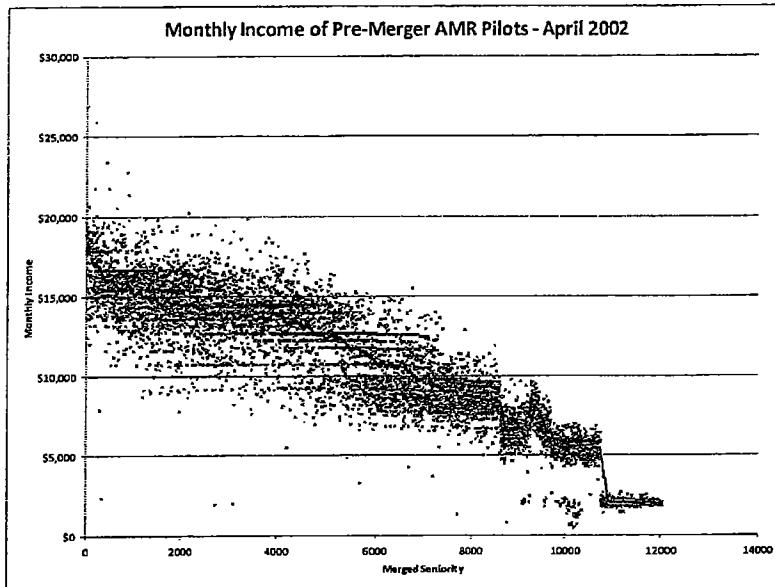
Therefore, when creating a list which places likes with likes, it's necessary to use the average income of a pilot's seniority "neighbourhood" rather than a pilot's individual income. Because the order of pilots on their original list cannot be altered, a pilot earning \$15,000, who one would expect to be placed higher on the list, could get stuck behind one who is earning \$7,000 and end up lower on the list. Using an average relieves this problem and adjusts for pilots' individual choices.

An additional issue can be seen around the 11,000th pilot where income drops sharply. This is because those pilots lower down the seniority list have fewer years of service. Pilot pay rates frequently go up annually, as a pilot accrues years of service with the airline, eventually hitting a maximum at 12 or 15 years. Since differences in income due to varying lengths of service would occur regardless of seniority, when calculating an average income, it is necessary to use pilots' incomes as they would be if they were all paid at the maximum years of service. Otherwise, the average income of a pilot's neighbourhood could be unrepresentatively low.

There are several methods for constructing averages. One is seen in Figure 5 above. The black line running through the dots is called a linear trend and is the line which comes as close as possible to all the individual data points in a population. Using a linear trend, one would look at the point on the trend line closest to a pilot and use that value as the average for his/her neighbourhood. Another common method is

called a rolling average as shown as the dark line in Figure 6 below. A rolling average takes the average of a certain number of pilots, 100 in this example, and uses it to derive an average for a neighbourhood.

Figure 6 – Scatter Plot, Income vs. Seniority, Rolling Average



The difference between the two methods is that the linear method does a poorer job of matching the data points than the rolling average does, while the rolling average is volatile, going up and down. This volatility is unavoidable with a rolling average. However, given that there is an inverse relationship between a seniority number and income (as one goes down the other goes up), a rolling average can produce unexpected results.

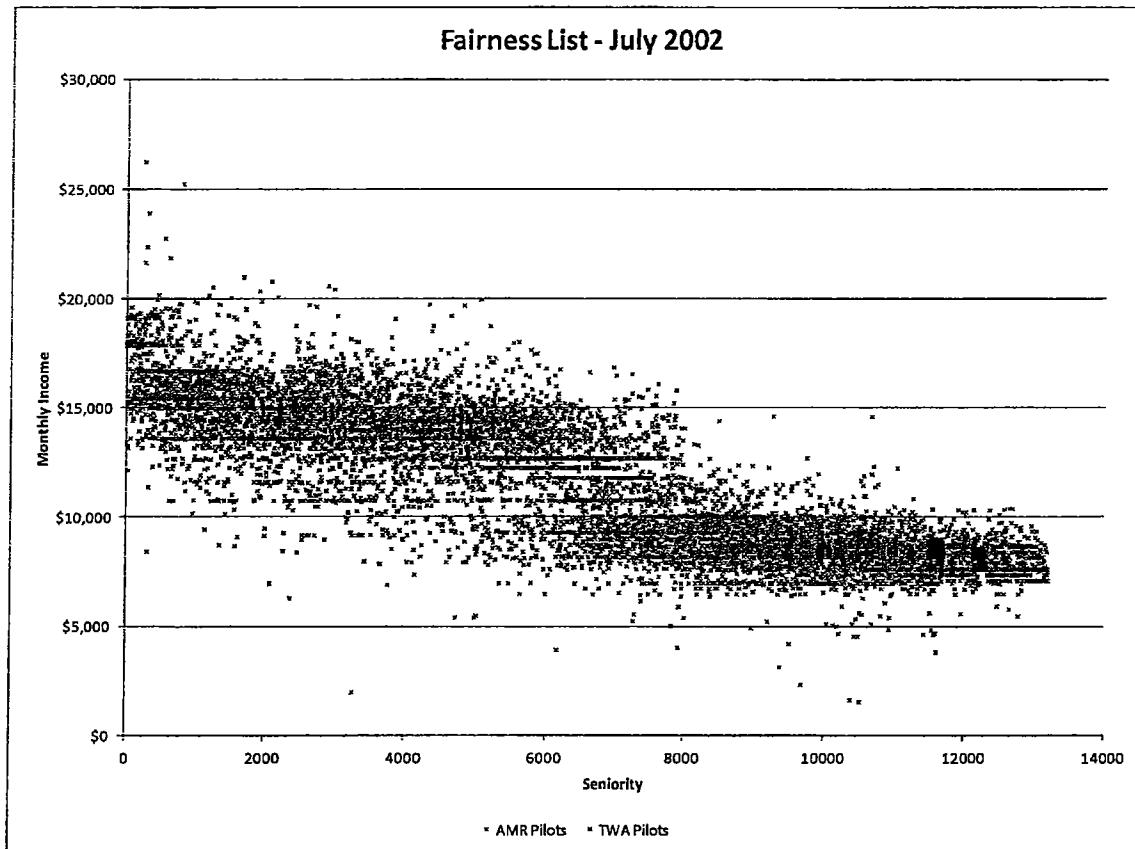
The objective, then, is to use an average which minimizes volatility while maximizing accuracy. If one uses a greater number of pilots in the average, the accuracy will go down but so will the volatility. By using a progressively larger number of pilots in the average, it was found that a neighbourhood of 240 pilots provided the greatest accuracy and beyond that point, the reduction in volatility was minimal. Therefore, I determined that 240 was the appropriate number of pilots for these calculations.

What this means, in practise, is that for every pilot an average of the 240 closest working pilots is calculated. For example, for the 1,000th American pilot, I take the 120 working APA pilots senior to him on the list and the 120 pilots junior to him and average all of their incomes. This exercise is carried out for each pilot of American and TWA.

With the average income for each pilot thus constructed, a list is then created which merges pilots according to income. The result is shown in Figure 7. The grey dots are American pilots and the black dots are TWA pilots. This list is the mathematically optimal one for matching pilots with those of like incomes given the constraint of not being able to reorder pilots on their own list. Not apparent from this

exhibit is that there are pilots who were on furlough in July 2002 that were placed at the bottom of the list starting with the American pilots followed by the TWA pilots. A graphic representation of the list is at Appendix 3 and it is referred to in data files as the "IOPTIMAL" model.

Figure 7 – Fairness Model Scatter Plot



The Arbitrated List

Since airline deregulation in 1978, there have been 30 major airline mergers in North America that have produced merged seniority lists. There are, no doubt, mergers between smaller carriers that I am unaware of but to the best of my knowledge the 30 listed in Figure 8 is a comprehensive list of the ones between major carriers with unionized pilots. Copies of the awards or agreements are in Appendix 4.

Figure 8 – List of Post-Deregulation Mergers

Merger	Date	Arbitrator
Southwest/AirTran	8/11/2011	Agreement
Pinnacle/Colgan/Mesaba	6/16/2011	Bloch
Republic/Frontier/Midwest/Lnyx	2/19/2011	Eischen
Northwest/Delta	12/8/2008	Bloch et al
US Airways/America West	5/1/2007	Nicolau
Canadian/Air Canada	6/16/2003	Keller
American/Trans World Airlines	11/6/2001	Unilateral
American/Reno	10/28/1999	Unilateral
AirTran/Valujet	9/22/1999	Scearce
American Eagle/Executive Airlines/Busin	8/20/1999	Agreement
First Air/NWT Air	1/22/1999	Keller
Southwest/Morris Air	1/1/1994	Unilateral
Continental/People Express	8/13/1991	Ross
FedEx/Flying Tiger	5/25/1990	Nicolau
Canadian Airlines/Wardair	2/8/1990	Munroe
Northwest/Republic	11/6/1989	Roberts
Alaska/Jet America	4/15/1989	Bloch
US Air/Piedmont	10/31/1988	Kagel
Braniff/Florida Express	1/5/1988	Agreement
EPA/CP/Nordair/PWA	11/16/1987	Teplitsky
American/Air California	7/1/1987	Unilateral
Continental/Frontier	6/16/1987	Nicolau
US Air/PSA	4/9/1987	Agreement
Continental/New York Air	12/18/1986	Bloch
TWA/Ozark	11/14/1986	Agreement
Canadian Pacific/Eastern Provincial	11/6/1986	Feller
Piedmont/Empire	2/12/1986	Unilateral
Alaska/Great Northern	7/2/1982	Feller
Flying Tiger/Seaboard World	3/16/1981	Siebel
PanAm/National	3/12/1981	Gill

Of the 30 mergers, in 5 cases the pilots merged their lists by agreement. In 5 cases, including the American/TWA merger, the list was decided without the agreement of both parties. In the remaining 20

cases the lists were merged by an arbitrator. Given this, there are 25 seniority mergers that can be referred to in order to estimate what an arbitrator would decide given the facts of the American/TWA merger and the arguments and proposals put forward by the respective pilot groups.

It should be noted that there is a temporal issue insofar as some of the awards/agreements came after the American/TWA merger. This means that negotiators would not have them available as precedents. However, mergers that came after American/TWA have not produced awards using approaches markedly different from those that came before and certainly none of these later awards have mentioned a specific reason why their decision might have been different at an earlier point in time. Therefore, given that the objective is to estimate an outcome of an arbitration, relying on more source material improves the quality of that estimate.

The Supplement CC list had three parts: The top of the list, made up exclusively of American pilots, a middle part where the remaining American pilots and some TWA pilots were merged arithmetically, and the bottom of the list made up exclusively of the remaining TWA pilots. Using Supplement CC as the integration model to work off of, I then reviewed the awards to find examples of where one group or the other was given exclusive positions at the top or bottom of the list.

The Top of the Seniority List

In at least 5 of the 25 relevant mergers, the pilots were merged by either date of hire or length of service. This means that one group or the other, as a result of hiring patterns, may have ended up in significant numbers at the very top or bottom of the list. However, this is a by-product of how date-based lists work and it must be assumed that the objective was to build lists according to dates, rather than explicitly attempting to give one group or the other a structural advantage or disadvantage in seniority. With that clarification made, I turn now to the 6 mergers where one group was given the top of the list.

1. Southwest/AirTran – 2011

The most recent merger, which culminated in the August 2011 agreement between the pilots of Southwest and AirTran saw 1,338 Southwest pilots being placed at the top of the list ahead of the first AirTran pilot. Given that there were 6,097 Southwest pilots on the combined list, the top block represented approximately 22% of the Southwest pilots. As the list was the result of negotiations between the groups and no rationale for the construction of the list was part of Side Letter 10, the agreement between SWAPA and Southwest Airlines to merge the two lists, little more can be said definitively about the placement of Southwest pilots at the top.

2. US Airways/America West – 2007

In the 2007 US Airways/America West merger award, George Nicolau placed 517 US Airways pilots (approximately 11% of their list) ahead of the first America West pilot, despite the fact that US Airways was in bankruptcy at the time of the merger and had 1,799 pilots on furlough while America West was

financially stable and hiring pilots. The rationale for this was that US Airways operated A330 aircraft and did international flying on the B767 and there were 423 Captains and First Officers awarded this equipment at the time of the merger. Interspersed with the top 423 pilots on the US Airways list were 92 inactive or management/supervisory pilots.

3. Continental/People Express – 1991

In the 1991 Continental/People Express merger award, Jerome Ross placed 651 Continental pilots ahead of the first group into which People Express pilots were merged. This group was initially constructed by Richard Bloch in the 1986 merger of the Continental/New York Air merger. Echoing Bloch's reasoning, Ross stated that "...the 651 senior CAL [Continental] captains ... brought equities to the merged carrier that far outweighed those of the senior PEX [People Express] pilots. The date of hire of the CAL group ranged from 1951 to 1972... whereas the PEX group was hired in the 1980 to 1982 period. Continental contributed equipment as assets providing job opportunities well beyond those brought by People Express."²⁴ An additional number of Captains from both New York Air and Continental who were merged prior to the Ross arbitration were also placed above the first People Express pilot, although the award does not specify how many.

4. Continental/Frontier – 1987

In the 1987 Continental/Frontier merger, George Nicolau summed up the prospect for Frontier airlines as follows: "... Frontier was an operating airline [at the merger date]. But any expectations regarding its future must rest on its past... [T]he fact is that Frontier had precious little prospect of surviving as of the day before its shut-down. It was shrinking, not expanding. It was continuously losing money, badly draining its corporate parent, People Express. Most of its assets had already been sold and leased back at less than favourable rates. No one, on that date, could have realistically believed that its prospects were bright or that the promotional expectations were high. The issue, starkly but realistically put, was one of survival."²⁵

However, Nicolau went on to state that, "It is significant that the Frontier pilots brought no jobs as such to the merger... On the other hand, the Frontier pilots brought to Continental their experience, their familiarity with the aircraft, and their knowledge of routes and cities served, all of which enabled the company to mount a successful 'turnkey' operation of substantial benefit to it. This circumstance argues against 'stapling' all the Frontier pilots to the bottom of Continental's long list."²⁶

Instead of stapling, as the terms of reference under which the arbitration was conducted could be interpreted to endorse, in the final award Nicolau created a list where all Frontier captains were placed below the junior Continental captain as of the first equipment assignment subsequent to merger date.

²⁴ Ross, 1991, 128.

²⁵ Nicolau, 1987, 42.

²⁶ Nicolau, 1987, 46-47.

5. Continental/New York Air – 1986

In the 1986 Continental/New York Air merger, Richard Bloch placed a group of 651 Continental pilots (approximately 28% of the CAL pilots) at the top of the list. Bloch stated that "[t]he first 651 positions on the CAL list have been constructed essentially, though not entirely, by reference to date of hire... These pilots were hired from 1951 through 1972. At that point there is a considerable break in hiring."²⁷ However, given that the list also consisted of pilots merged by ratio, the placement of Continental pilots at the top of the list must be seen as more deliberate than the same placement would seem under a pure date-of-hire integration.

6. Canadian Pacific/Eastern Provincial – 1986

Although the award was effectively overturned in a subsequent merger, David Feller placed 214 Canadian Pacific pilots at the top of the list. Feller stated that these pilots were "...hired in 1967 or earlier, at a time when EPA was essentially a bush airline whose pilots had no expectation of flying jet aircraft."²⁸

Discussion

Based on a review of these awards, there is support for a theory that an arbitrator would have awarded a list with a significant number of American pilots at the top of the list. In estimating the number of pilots an arbitrator would have put in that block, several facts were considered including the following:

- American operated the B777 and A300 while TWA did not. The total number of positions American had on these aircraft was 1,159.
- The junior B777 Captain was #2393 on the American seniority list.
- The junior A300 Captain was considerably more junior and was #5411.

Given these facts, using the junior B777 and A300 captain would have made sense had TWA been comparable to Frontier when it merged with Continental. TWA was in bankruptcy when it merged with American whereas Frontier had ceased operation. It would be more reasonable, however, to argue that TWA was closer to US Airways, which was also bankrupt when it merged with America West. In that case, however, it was US Airways pilots who were given the top of the list.

In light of these comparable cases, I conclude that an arbitrator would have constructed a list with 1,159 American pilots, the total number of B777 and A300 positions, at the top.

²⁷ Bloch, 1986, 7.

²⁸ Feller, 1986, 14.

The Bottom of the Seniority List

As mentioned above, there were 5 mergers where one group saw some of its pilots placed at the bottom of the lists. To extend the clarification above, it is not uncommon that pilots hired after a merger date are placed at the bottom of a merged list according to their dates of hire. It is also not uncommon that only one of the two merging airlines did any hiring after a merger was announced and therefore, new hires are, in essence, stapled to the merged list. Because these pilots are not actually parties to the merger negotiations or arbitrations, their placement at the bottom of the list is of no particular relevance here.

1. Southwest/AirTran – 2011

In the agreement between Southwest and AirTran, 368 AirTran pilots, approximately 21% of their list, were placed behind the last Southwest pilot hired prior to the merger announcement. As mentioned above, below this group were place pilots hired after the merger announcement. Again, as the merged list was the product of an agreement, the logic and rationale behind the construction of the list isn't known in the manner it is in an arbitral award.

AirTran operated two aircraft type, the B737 and B717, only the larger of which was operated by Southwest. Given that 53% of AirTran's 2010 ASMs were on the B717,²⁹ a rough estimate is that 27% of its pilots were B717 First Officers. This was likely at least a contributing factor in the agreement to end-tail some AirTran pilots. However, to contrast the end-tailing of AirTran pilots to those of TWA, in the latter case approximately 57% of TWA's pilots were stapled vs 21% of AirTran's. AirTran's smallest aircraft was also the B717 but American operated the Fokker 100, which was an aircraft comparable to the B717 in size and in the type of missions.

2. Republic/Frontier/Midwest/Lynx – 2011

In the complex merger of four airlines, arbitrator Dana Eischen end-tailed 204 Midwest pilots (63% of their list) who were on furlough at the time of the merger. As he stated, "...it cannot be denied that Midwest was an air carrier on the cusp of failure well down the road to extinction at the time of the transaction... One can take no satisfaction in validating the hard cold fact that no reasonable interpretation of fairness and equity justifies placing the remaining pre-acquisition furloughed MEA pilots anywhere but at the bottom tier of the IMSL. There is no evidentiary basis for any expectation that they might have been recalled to active service prior to the acquisition transactions."³⁰

Of particular interest in this award is that Eischen only end-tailed the Midwest furloughes while there was a rationale for similar treatment for at least some of the Lynx pilots. As he stated, "their reasonable expectations for career advancement and job security were the least of the active pilot groups, ranking above only the [Midwest] pre-transaction furloghees [sic]... [T]hey operated only turboprop aircraft, had accumulated only limited seniority while flying for a startup operation that promptly went bankrupt and flew under less favorable wages and working conditions. On the other hand, the Q400 was comparable in

²⁹ US Department of Transportation, Form 41, T2 2010 Q1-4.

³⁰ Eischen, 2011, 34.

seating capacity and productivity to the E-170, to which most of the Lynx Aviation market flying was transferred after acquisition. Treatment of all Lynx pilots as active, with appropriate placement to give them access to that flying is fair and equitable."

As a result, the 101 Lynx pilots were merged with 559 Republic pilots in the third of four groups, the fourth being the Midwest furloughes.

3. US Airways/America West – 2007

At the time of the merger, US Airways was in bankruptcy and had a number of pilots on furlough. At the time of the award, there were 1,751 pilots (37% of the US Airways list) on furlough. Even though 959 of these pilots had returned to active service at the time of the award, George Nicolau end-tailed the entire group of furloughes. This decision proved to be highly controversial. In a dissenting opinion, pilot neutral, Jim Brucia, stated:

I do not agree with the Board's decision, in the particular circumstances of this case, to integrate only working pilots as of the date announcement, leaving all those on furlough at that date on the bottom of the combined seniority list. As a consequence of the Boards decision, [the junior] America West pilot, who was hired less than 2 months before the merger was announced, has been placed immediately senior to US Airways pilot Colello [the senior US Airways furloughhee] who was hired more than 16 years earlier and who had over 16 years of credited length of service. I disagree with this placement, which disregards Colello's substantial service time.³¹

The award was the major cause of the US Airways pilots leaving the Air Line Pilots Association and forming their own union, the US Airline Pilots Association, which refuses to be bound by the Nicolau award. As a result of this action and the downstream fact that a joint contract with US Airways had yet to be obtained, the two pilot groups are not yet integrated as of the writing of this report.

4. Continental/Frontier – 1987

As mentioned above, Frontier was in exceptionally dire circumstances at the time of the Continental merger. Indeed, the snapshot date in the "Joint Protection Agreement" that served as arbitrator Nicolau's terms of reference, used August 23, 1986 as this was the day prior to Frontier's shutdown. Nicolau placed 67 Frontier pilots, 15% of their list, at the bottom of the combined list. As he stated, "I have, however, placed the remaining 67 Frontier pilots, the bulk of whom were hired from late 1985 through July 1986 below Martes, the last Continental pilot hired before the JPA was signed. Given the late hiring and the unknown economic situation at Frontier, these pilots, in my view, do not bring the same equitable interests as those who proceeded them. The last hired Frontier pilot is then followed on the list by Second Officer T.J. Kratt, who was hired by Continental in February 1987, some four months after the JPA. He, in turn, is followed by approximately 400 others, soon to be 1000."³²

³¹ Brucia dissent, 2011, 2-3

³² Nicolau, 1987, 50-51

5. Canadian Pacific/Eastern Provincial – 1986

Arbitrator David Feller, after he ratioed the CP and EP lists together in date-based groups, was left with 1 Eastern pilot hired in 1982 and a group of pilots who were not employed by Eastern at the time of the merger. As he explained, "The definition of 'EP pilot' includes those pilots not now employed who were hired as strike replacements during the 1983 strike at Eastern Provincial and who were displaced at the termination of that strike but have recall rights."³³ These pilots (approximately 2 dozen) and the single 1982 hire were end-tailed.

Discussion

In three of the five mergers where a group of pilots were end-tailed, the reason was that the pilots were not working due to furlough or because of recall rights. In Continental/Frontier, Nicolau end-tailed a group of Frontier pilots due to their diminished expectations arising from Frontier's non-operating status and due to terms of reference of the arbitration, which he stated had a "considerable and obvious tilt in favor of the [Continental] pilots."³⁴ Lastly, in the Southwest/AirTran agreement, one can only speculate as to the rationale for end-tailing 21% of the AirTran pilots.

Leaving aside the last integration, which was the product of an agreement not arbitration, it can be seen that end-tailing pilots is the result of circumstances that are not mirrored in the American/TWA merger. No TWA pilots were on furlough at the time of the merger and it was an operating airline. Therefore, it is reasonable to assume that an arbitrated list would not have seen any TWA pilots end-tailed.

Nevertheless, the fact remains that the TWA pilots' own proposal saw 209 of their pilots being stapled, and presumably this position would have been put in front of an arbitrator. Even though I don't believe there is any justification for end-tailing any TWA pilots, I must assume the TWA pilots' proposal would have led to that outcome.

Thus far I've discussed the top and bottom of the list. There are manifold ways the pilots in the middle of the list could have been merged. The most common method in recent awards is to group pilots by status and equipment and to merge them arithmetically. As seen in Figure 9, below, as of April 2001, 39% of American pilots were in wide-body positions (B767, B777 and A300) while only 31% of TWA positions were. This might have resulted in relatively more American pilots being placed in a top grouping in the absence of a top block of 1,159 American pilots I estimated above. However, as the assumption is that there would have been a top block, it is more likely that the remaining pilots would have been ratioed together as one large group.

³³ Feller, 1986, 12

³⁴ Nicolau, 1987, 46

Figure 9 – Percentage of TWA Pilots by Status and Equipment

Percentage of Pilots by Status/Equipment

	TWA	AMR
Wide-Body Captain	15%	17%
Narrow-Body Captain	35%	28%
Wide-Body First Officer	16%	22%
Narrow-Body First Officer/Flight Engineer	33%	32%

Therefore, my estimate is that an arbitrated award would have produced a merged list of all pilots as of April 2001. The list would have two categories, a top block of 1,159 American pilots followed by an arithmetically merged category containing the remaining 10,398 American pilots with 1,957 TWA pilots and a stapled group of 209. A graphic representation of this list is included as Appendix 3 and is referred to in data files as the "ARBMODEL".

The Marginal List

When estimating the impact of a breach or an injury it is a common practice to use a highly conservative set of assumptions in order to gauge the severity of the breach. As this sort of "lowball" estimate is required for assessing the magnitude of more reasonable estimates, notional amounts are not particularly helpful. For instance, one could assume that the APA would have stapled one less TWA pilot or, put another way, merged one additional TWA pilot with American pilots. Measuring the difference between this "+1" list and Supplement CC list would indeed produce some damages, but they would be symbolic and unhelpful for assessing the size and reasonableness of the actual damage estimate.

In analyzing this matter, I have concluded that a marginal, material change would have been to merge an additional 200 TWA pilots in with the American pilots. I base this on the fact that the APA's March 2, 2001 proposal to the TWA pilots was to staple 1,542. Supplement CC, finalized in November 2001 stapled 1,226. This represents a change of 316 pilots removed from the stapled group.

It seems reasonable to me that in the absence of ALPA's violation at least 200 additional pilots would have been merged. Had the pressure been more intensive, negotiations might have been farther along by September 11, 2001 and the final list would have been less influenced by the difficulties the airline industry and pilots were facing. Furthermore, pressure could have extended negotiations further to produce a better list for the TWA pilots. In either case, if the APA had lowered the staple by 316 on their own, with ALPA's violation, a material, marginal change would be an additional 200, or what I refer to as the +200 Model.

The +200 would be constructed with 2,484 American pilots at the top, the same as with the Supplement CC list. This would be followed by a merged group of the remaining 8,870 American pilots with 1,140 TWA pilots, whereas Supplement CC had only 940 TWA pilots merged. Lastly there would be a staple of

1,026 TWA pilots as opposed to the 1,226 pilots stapled on the Supplement CC list. A graphic representation of this list is included as Appendix 3 and is referred to in data files as the "SUPCC+200" model.

The Salamat Damage Model

With the Fairness, Arbitrated and Marginal models as a context, I now return to the replication principle in order to estimate what the TWA pilots and the APA would have agreed to had ALPA not violated its duty of fair representation. This principle, again, attempts to reproduce what parties would have agreed to had they been acting reasonably, and that one yardstick is the outcome from other, similar matters.

With that as a conceptual framework, I turn to the position of the APA, as stated in its response to the TWA pilots' "Rightful Place Proposal." A summary of their objections can be found at pages 1-2 of their July 18, 2001 letter to the Chair of the TWA MEC Merger Committee:

- The proposal fails to take into account any of the radical differences between our groups' pre-transaction career expectations, differences based on the nature of the carriers' pre-transaction operations; pre-transaction pay, benefits and working conditions; and pre-transaction long-term job security based on the carriers' financial condition.
- The proposal creates enormous windfalls for the TWA Pilots at the expense of the AA Pilots' career expectations in many respects, including crediting the TWA Pilots for assets which were not acquired by American, and for other assets which will not be deployed in the consolidated operation. The proposal thereby gives the TWA Pilots placement on the list beyond the value the TWA assets will add to the consolidated operation, and will permit the TWA Pilots - who have already reaped a windfall from the transaction - to hold positions which were rightfully the expectation of the AA Pilots, and to gravitate to the top of the positions which they hold.
- In addition to these conceptual problems, the proposal is based on a whole series of faulty factual premises, which increase the transfer of AA Pilots' career expectancies to the TWA Pilots.

The fundamental question, then, is to what extent ALPA, having employed the options and strategies listed in Figure 1, could have overcome the position of the APA. To begin that assessment, it is first necessary to establish how reasonable the APA's position in fact was.

The APA's first bullet point pertains to career expectations as a result of pre-merger opportunities, pay and job security. Difference in pay, as Nicolau noted in the US Airways/America West merger (see above), rarely plays any significant role in the outcome of a seniority merger and therefore cannot be seen as a reasonable position. Job security has factored into the construction of seniority lists, but only in exceptional circumstances, such as in the case of furloughes or the Frontier pilots. As TWA had no

furloughes at the time of the merger and was still an operating airline, albeit in bankruptcy, only marginal weight could reasonably be put on the TWA pilots' job security. No one can say conclusively what would have occurred had AMR not merged with TWA.

Differing career opportunities, however, have certainly played a role in the construction of lists. The amount of "premium" work, such as wide-body captaincies, aircraft on order, airline growth and quality of work all play some role in virtually every merger and it is not uncommon for one party to argue that its pilots should be granted a seniority premium to reflect the "better opportunities" they bring and that the other party will have a chance to share in.

The second bullet point is related in that it makes the claim that the jobs TWA pilots occupied at the time of the merger might not continue into the future. This type of claim is also very common in seniority mergers. For instance, in the Northwest/Delta merger, arbitrators Bloch, Eischen and Horowitz noted:

[T]he Northwest fleet... is composed of numerous aircraft of questionable long-term utility. NWA's DC-9 fleet is old, inefficient, and likely scheduled for replacement. The exact timing and extent of that model's departure is uncertain, but the record is clear that this portion of the fleet has already been substantially reduced... Under even the most optimistic case scenario, therefore, this is an aircraft whose time is limited.³⁵

Although the award did not precisely state the impact of the DC-9 on the manner in which they constructed the list, based on the number of DC-9 positions Northwest had, it appears that the arbitrators gave the Northwest pilots credit for approximately half the DC-9 Captain positions they held at the announcement of the merger.³⁶

The third bullet point included objections to only crediting American pilots with jobs for aircraft on order up to 2002 and understating the number of jobs that each aircraft would bring them. The third bullet also involved an objection to treating the A300, B767 and B757 as one aircraft grouping. Further objections included:

- "The AA Pilots are entitled to some consideration for the risk they are bearing to their career progressions in having pilots from a failing carrier placed ahead of them on the integrated seniority list."³⁷
- The TWA proposal did not factor in the promotional opportunities created by the attrition of American pilots.
- The TWA proposal was based only on upgrade from First Officer to Captain and failed to recognize intervening steps in career progression.
- The TWA proposal would have guaranteed more Captain jobs to TWA pilots than the APA was prepared to protect.

³⁵ Bloch, Horowitz, Eischen, 2008, 22.

³⁶ Northwest had a 2415 Captains, 446 of them on the DC-9. The top two of four categories in the award gave Northwest 2204 positions, making for a difference of -211, or near half of 446.

³⁷ APA, July 18, 2001 letter, 14.

As these latter objections were, in large measure, specific to the "Rightful Place Proposal" it is difficult to generalize from them or to find examples of other mergers that would illuminate the reasonableness of the APA's position in its third bullet point. However, having reviewed the TWA proposal and the APA's response, I am unconvinced that the Rightful Place Proposal could have formed the basis for an agreement between the TWA pilots and the APA. Therefore, in estimating what was achievable, I believe it is only reasonable to start with the basic outline of Supplement CC.

As regards the top block of American pilots, it was mentioned above that on the Supplement CC list this block was 2,592 pilots. The TWA's Rightful Place Proposal would have created a block of 1,512, or 1,000 smaller. Using the Nicolau methodology from Continental/Frontier, the junior B777 Captain who would have been #2393 would have yielded a block approximately 200 pilots smaller. Another approach would have been to reserve spaces at the top of the list in the manner Nicolau did in US Airways/America West. Using B777, A300 and B767 Captains and B777, A300 First Officers would have created a block of 2,450. Using all Captains with the exception of those on the F100 would have created a block of 2,494. These approaches and their differences from Supplement CC is shown below in Figure 10.

Figure 10 – Comparison of Approaches to Top of List

	AMR Top Block	Diff From Sup. CC
Supplement CC	2592	
All Captains Except F100	2494	-98
Widebody CA, B777, A300 F/Os	2450	-142
Junior B777 Captain	2393	-199
Rightful Place Proposal	1512	-938

Using all captains except the F100 would have created a top block only 98 pilots smaller than Supplement CC and is more consistent with the APA's concern about protecting Captain jobs than the others would. Given that it is close in effect to what Nicolau did in Continental/Frontier, it would have been reasonable for the TWA pilots and the APA to agree that the top of the list would be made up of 2,494 American pilots.

The number of TWA pilots that were stapled is a more difficult matter to estimate. Supplement CC saw 1,226 TWA pilots stapled while the Rightful Place Proposal would have stapled 209. This difference of 1,017 pilots is of much greater practical importance than the difference of 938 the parties had about the top of the list. Pilots toward the bottom of the list are subject to furlough and in the days after September 11, 2001 there was great concern about this. Even prior to September 11, there was a question about how many pilots would be needed in a merged American/TWA.

The APA merged 940 TWA pilots with American pilots and stapled the remainder. Given that there were 939 MD90 and B767 Captains on the TWA list, it would appear that this was the basis for that number. As noted above, there have been cases when pilots who did not even bring jobs were merged (not

stapled). As of the merger date, all the TWA pilots were working. Thus, my estimate would be that an arbitrator would not have stapled any TWA pilots but for the fact that the TWA's last two proposals would have stapled some number of their own pilots.

I am left, therefore, trying to employ the logic both groups used to assess what they would have ultimately agreed to had ALPA deployed its resources and support effectively. After considering several models in addition to the ones discussed in detail above, it is my estimate that, given APA's recognition that TWA brought Captain positions with its fleet, further pressure and incentives on ALPA's part could have at least convinced them to recognize that the TWA fleet also required First Officers. Large commercial aircraft generally do. If APA was willing to accept that the TWA pilots were entitled to credit for captain positions, if they were acting reasonably it seems likely that given meaningful pressure they would ultimately have been convinced the TWA pilots were also entitled to the co-pilot positions. If these positions were included in the merged group, it would have resulted in a list with the composition seen in Figure 11.

Figure 11 – Damage Model List Construction Counts

	AMR	TWA
Top	2,494	-
Merged	8,870	1,873
Staple	-	464
Total	11,364	2,337

As a result of this simple but significant change, approximately 762 TWA pilots would have been moved up into the merged group and many of them would have been spared furlough. A graphic representation of the list is included as Appendix 3 and it is referred to in the data files as the "DMODEL".

Conditions and Restrictions

An element of the agreement that is related to but separate from the seniority list itself has to do with bidding restrictions. The TWA Pilots' Rightful Place Proposal included five-year protections that would have guaranteed them 17% of the narrow-body and small wide-body captaincies. Supplement CC also gave the TWA pilots a guaranteed number of positions, although it did so by giving them exclusive access to positions in the St. Louis base and then, via an agreement with American, guaranteeing the number of captain position available there. Additionally, both groups proposed restricting the TWA pilots from holding A300 or B777 positions, although for different periods of time.

The APA had proposed protecting some number of captain positions for the TWA pilots as early as their first proposal. As they stated, "[O]ur proposed fence provides protections in both directions. The fence that we propose is designed to protect the TWA Pilots' legitimate career expectations..."³⁸ Later, in their

³⁸ March 2, 2001 Letter from Ed White to Leroy Bensel, 3.

response to the Rightful Place Proposal this was echoed: "As we have repeatedly stated, we are prepared to guarantee the number of sustainable Captain jobs contributed by the TWA assets to the consolidated system to TWA Captains, and to a specified number of TWA First Officers who had a plausible anticipation when hired of upgrading to Captain at TWA."³⁹

Bidding restrictions can be horrendously complex and in modelling their impacts over several years in several pilot seniority mergers, I can attest to the fact that they usually have unexpected consequences. The fact that the bidding restriction in the Roberts award merging the pilots of Northwest and Republic spawned 24 interpretive arbitrations⁴⁰ is but one illustration of their complexities.

The bidding restrictions in Supplement CC:

1. Guaranteed the TWA pilots 30% of the Small Wide-Body Captaincies available at DFW and ORD (as opposed to the percentage of all positions available system-wide in the TWA proposal)
2. Guaranteed the TWA pilots 30% of the Narrow-Body Captaincies available at DFW and ORD
3. Blocked TWA from holding any B777,MD11 or A300 position until the Junior American Airlines pilot had sufficient seniority to hold the position.
4. Protected the STL domicile for TWA pilots and prevented them from holding positions outside that base.

A key difference between the TWA proposal and Supplement CC was that in the latter the guarantees were also maxima, capping the number of positions TWA pilots could occupy. As shown in [Figure 12](#) below, agreeing to the capping part of the provision would have immediately and permanently cost TWA pilots 55% of the wide-body captaincies and 33% of the narrow-body captaincies they had at the time of the merger.

In order for the guarantee of 30% to be redundant, TWA pilots would have to be given sufficient seniority that they could hold their positions without the guarantee. The Fairness Model list gives a reasonable approximation of this, as it gives pilots enough seniority to place them among pilots earning roughly the same amount as of July 2002, after some downsizing had occurred. Under that model, TWA pilots would have gained an average of 2,988 seniority numbers relative to Supplement CC. Under the Salamat Damage Model, however, the average increase in seniority would only be 1,571 numbers and no single TWA pilot would have a seniority number equal to or better than their Fairness Model number. Therefore, it can be concluded that the guarantee of a number of positions would still be required in order for TWA pilots to continue to have access to a minimum percentage of the jobs they held at the time of the merger.

³⁹ July 18, 2001, Letter from Ed White to Michael Day, 16.

⁴⁰ Bloch, Eischen, Horowitz, Northwest/Delta Pilot Seniority Award, fn 17.

Figure 12 – TWA and AMR Pilot Positions

Positions as of April 2001 (Unassigned Pilots Assigned Proportionally)		
	Small Wide-Body Captains	Narrow Body Captains
AMR (DFW/ORD)	890	3477
TWA	598	1548
Percentage of AMR	67%	45%
Entitlement Under Supplement CC	267	1043
Loss of Positions	-331	-505
% of Positions Lost	-55%	-33%

For this reason, an agreement on protections would have had to be somewhere in the space between those in the Rightful Place Proposal and Supplement CC. As the protections for TWA was lower in Supplement CC it requires little in the way of assumptions to conclude that Supplement CC would have provided the floor for small wide-body and narrow-body captaincies. However, as mentioned above, if this were also to cap the number of positions, then the TWA pilots would have had to agree to a permanent loss of opportunities and this does not seem credible given that there are no precedents for such a permanent cap in any of the reviewed awards. Therefore, I conclude that the restrictions the parties would have agreed to would have mirrored Supplement CC minimums without functioning as caps.

As regards to the fence on B777, MD11 and A300 positions, to the point in time when negotiations were occurring, there were many awards with no significant restrictions, several with a restrictions ranging from 2 to 5 years and the infamous Roberts award with 17 years. As mentioned above, American Airlines pilot, BD White, was used as the trigger for dropping this restriction. However, by 2025 he still would not have sufficient seniority (#2393 or better) to hold the position of B777 Captain. Therefore, more than 24 years of restrictions would have been necessary, displacing Roberts as the most far-reaching.

As shown in Figure 13, under the Salamat Damage Model list only a handful of TWA pilots would be within striking range of a 777 Captaincy for the dozen years after the mergers. However, the junior American A300 Captain was very junior indeed, with less seniority than the Junior B727 Captain, and approximately 348 TWA pilots per year would have had the seniority to hold the A300 position under the Salamat Damage Model list.

Figure 13 – TWA Pilots Above Seniority Thresholds

Number of TWA Pilots with Sen # Better than 2393 On Damage Model List				Number of TWA Pilots with Sen # Better than 5411 On Damage Model List			
Year	Count	Year	Count	Year	Count	Year	Count
2003	3	2015	18	2003	351	2015	18
2004	2	2016	17	2004	322	2016	17
2005	1	2017	14	2005	325	2017	14
2006	0	2018	55	2006	330	2018	55
2007	0	2019	114	2007	340	2019	114
2008	0	2020	166	2008	341	2020	166
2009	0	2021	196	2009	341	2021	196
2010	0	2022	224	2010	341	2022	224
2011	0	2023	244	2011	356	2023	244
2012	0	2024	296	2012	381	2024	296
2013	0	2025	345	2013	409	2025	345
2014	9			2014	423		

However, the junior A300 First Officer was near the bottom of the American list and the junior B777 only a quarter of the way up from the bottom. While the guaranteed minimums on TWA captaincies would have served as justification for the B777 and A300 Captain fences, there are no corresponding protections for junior TWA pilots in the first officer range. Therefore, agreeing to a 10 year fences on B777 and A300 Captain positions would have represented a balanced, meaningful compromise for the TWA pilots.

The St. Louis base was protected for TWA pilots as an integral part of the guarantee of positions and therefore has to be seen as something intended for their benefit. However, prior to the merger, 30% of the TWA pilots did not have STL as a base. In the absence of guarantees that were structurally tied to that base, this limit on their ability to change domiciles, which is an important way pilots exercise their seniority, would not have provided the TWA pilots with protection at all. Given that guarantees in other mergers have been accomplished without requiring pilots be restricted to one domicile, there are other ways the parties could have structured conditions and restrictions to accomplish the goals without placing this severe limit on the TWA pilots' mobility.

In summary, then, my conclusion is that the conditions and restrictions agreed to would have been:

1. Guarantee the TWA pilots 30% of the Small Wide-Body Captaincies available at DFW and ORD.
2. Guarantee the TWA pilots 30% of the Narrow-Body Captaincies available at DFW and ORD.
3. TWA pilots fenced from holding any B777, MD11 or A300 Captain position until December 31, 2011.
4. The TWA pilots would not have been prevented from bidding outside the STL base.

Damage Summary

Before turning to the precise method for calculating damages, a summary of the damages serves as a useful conclusion to the description of the various outcomes. As shown below in Figure 14, the damages suffered by the TWA pilots, from a fairness point of view, are \$1.4B. Even under the marginal model, the damages are \$164M. However, under what I believe is the likely outcome of a successfully negotiated list, the Salamat Damage Model, the TWA pilots have suffered approximately \$887M in damages as a result of ALPA's violation of its duty of fair representation.

Figure 14 – Summary of Damages

Calculated Damages \$M	
<u>(Unmitigated)</u>	
Fairness Model	\$ (1,442)
Arbitrated List	\$ (1,160)
Damage Model	\$ (887)
Marginal (+200) Model	\$ (164)

Section 4 – Damage Calculations

The damage calculations were computed using the Perl programming language⁴¹ in combination with a MySQL database. The code containing all major functions used for this report is included as Appendix 5. Some additional functions used in importing data, validating results and stress testing sources are included as Appendix 6. The code use in building the Fairness Model is included as Appendix 7.

Data that was relied on is as follows:

1. Seniority lists for July of each year from 2002 to 2011 provided by the APA – Appendix 8
2. Pilot activity reports detailing each pilots' position, credit hours and line status for each month from April 2002 to June 2012 from American Airlines – Appendix 9
3. An April 9, 2001 American Airlines pilot seniority list with pilots, positions and line status – Appendix 10
4. An April 10, 2001 TWA pilot seniority list with pilots, positions, and line status – Appendix 11
5. The American Airlines/APA Supplement A pay rates from the 1998 Agreement – Appendix 12
6. The American Airlines/APA Supplement A pay rates from the 2003 Agreement – Appendix 13
7. Annual rates of return for the American Airlines pilots' retirement fund 1997-2011 – Appendix 14
8. Life expectancy tables for 2011 from the Office of the State Actuary – Appendix 15

MySQL tables that were relied on or produced in the calculation process are as follows with their file names. All data tables used or created in the calculation process are included as Appendix 16, a compressed archive containing field definitions and comma-separated text files with the actual data.

1. Pilot Database (pilotdb)
2. Pilot Employment History (emphist)
3. Pay Rates (payrates)
4. Calculated Pilot Monthly Income (income)
5. Pension Impacts (pension)
6. Rolling Average Income Data (proxy)
7. Seniority Lists as Imported (senlist table with listid: "SUPCC.ACT")
8. Aged Seniority Lists (senlist table with listid ending: ".FCST")

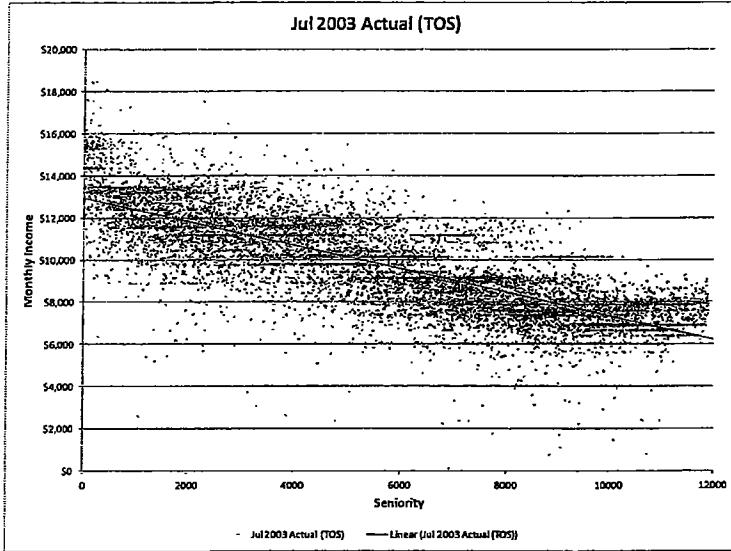
As discussed above, a pilot's seniority is a form of currency that he or she uses to bid for a job position, schedule, vacation allotment, training schedules, home base and a variety of monetary and lifestyle options. A pilot who is not at one extreme of a seniority list (i.e. not among the most junior or senior) will have to make a choice about whether they would prefer to be relatively senior in a lower position or junior in a higher one. The most junior pilots in a position will generally sit as a reserve, typically earning less and being on call for several days of the month. They will also have the last choice for things such as vacation days, training schedules, and in some cases meals. Pilots are paid according to the rate for their equipment and the number of hours they spend actually flying aircraft. As reserves only fly when needed

⁴¹ Scripts were executed using Perl 5, version 14, subversion 2 (v5.14.2) and MySQL version 5.1.60-community on a PC running Windows 7.

and not according to a schedule, they are paid a guaranteed minimum number of hours which generally works out to less than the hours flown by pilots with a schedule, known as line-holders or block-holders. For that reason, many pilots do not bid for the highest paying position they could hold, but make trade-offs between money and lifestyle.

In Figure 15 below, the grey dots plot each American Airlines pilot according to their seniority and their monthly earnings as if they had 12 years of services in the month of July 2003.

Figure 15 – Scatter Plot, AMR Top of Scale Income, Linear Trend



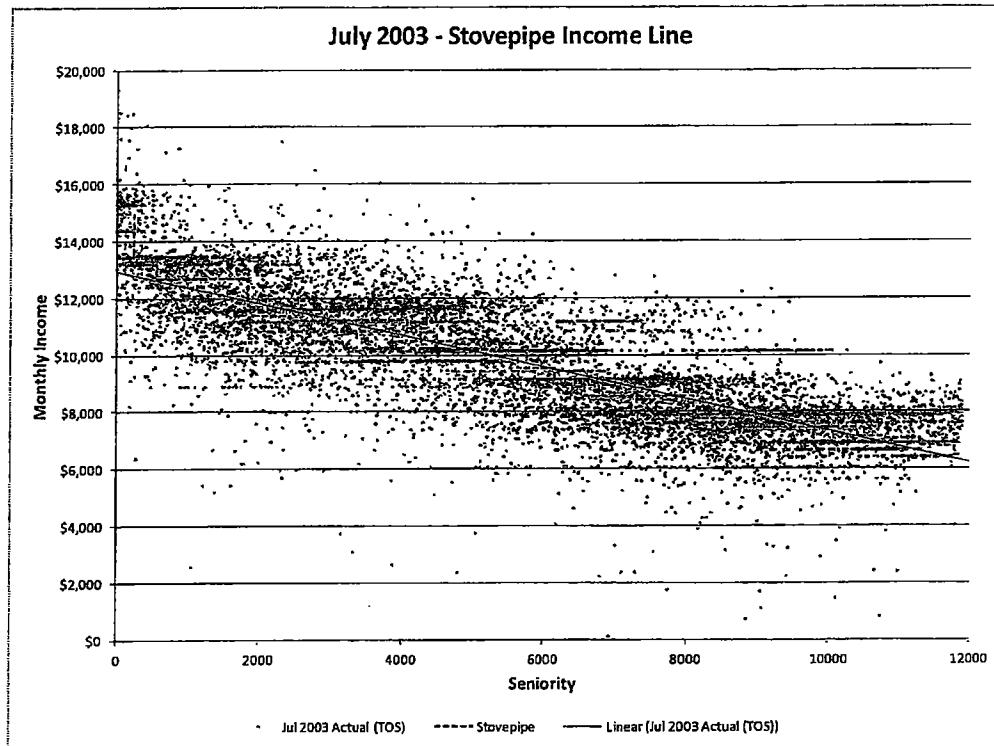
Two observations are readily apparent: First, the lower a pilot's seniority number (i.e. is more senior), the higher his or her income tends to be. Second, pilots who are close to each other on the seniority list can have considerably different incomes. This difference in income for pilots is the result of the particular tradeoffs pilots have made and also as a result of the number of hours each pilot worked in a month. The number of hours worked is not always related to seniority as a pilot can, for instance, be on medical or personal leave for part of the month, which would mean that the number of hours they are credited for may only represent a few days work. Leaving aside these issues for the moment, the dispersion of incomes is primarily the result of individual choices.

A more detailed way to analyze the effect of pilot choice is to compare pilots' actual income to the maximum income each pilot could have earned if every pilot was in the highest paying position their seniority would allow. In Figure 16 below, this maximum income, frequently referred to as stovepipe income, is shown as the dashed line. Pilots whose income is above the line have sacrificed lifestyle for income while pilots who are below the line have done the opposite and have taken lower a lower paying position in exchange for non-monetary benefits.

Pilot preference is the main reason for a pilot being above or below the stovepipe line, but are three other reasons that can cause it as well. The first most common reason as referred to above is that the pilot is not available for the entire month, causing them to have lower income. The second most common reasons are bidding restrictions that allow a pilot to have preferential access to higher positions than their seniority would allow or alternatively block a pilot from holding such a position. Related to this are position freezes that prevent a pilot from changing positions frequently, thereby limiting their exercise of seniority. The third most common reason are reinstatement rights and "no displacement" provisions. These mean than pilots, once they have attained a position, may have preferential access to return to that position in the event they are displaced or alternatively that they can only be displaced by a pilot with more seniority under limited conditions. As a result, reinstatement and "no displacements" result in pilots holding positions out of seniority order.

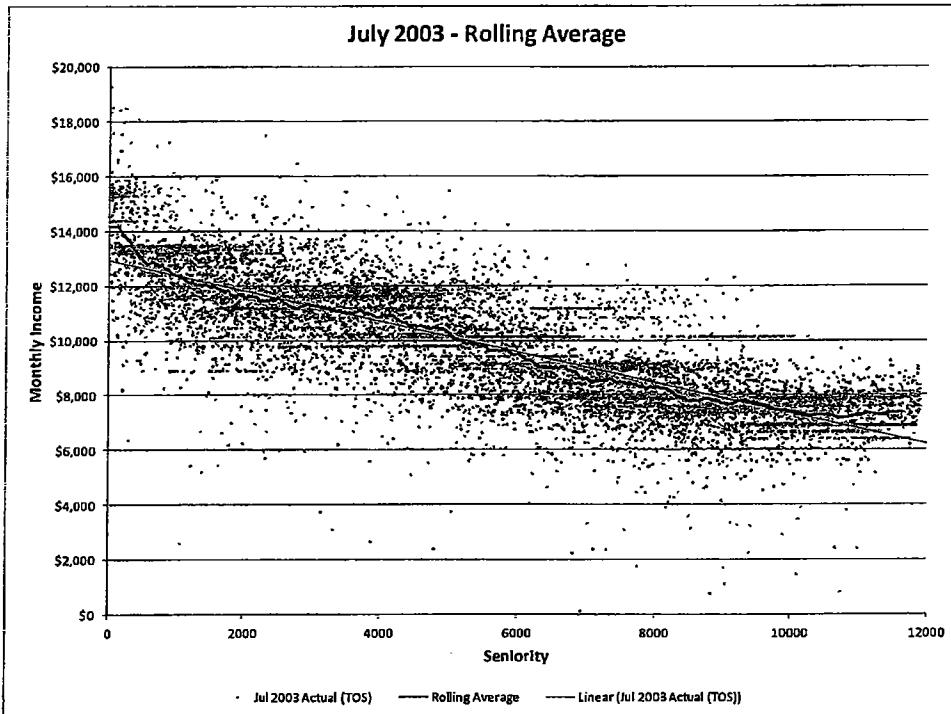
For example, as discussed previously, Supplement CC included a guaranteed number of captain positions for TWA pilots. However, the merged seniority list did not give them sufficient seniority to hold those positions. As a result, some TWA pilots held these guaranteed positions "out of seniority order."

Figure 16 – Scatter Plot, AMR Top of Scale Income, Stovepipe



A third method for analyzing the relationship between income and seniority is to use a rolling average, as was referred to above. To reiterate, the rolling average is the average of the 240 pilots closest to each pilot on the seniority list. In Figure 17, the heavier black line plots the rolling average for each pilot. It can be seen that the rolling is close to the linear average but that it is higher at the most senior and junior ends of the seniority list.

Figure 17 – Scatter Plot, AMR Top of Scale Income, Rolling Average



To summarize, there are three methods for describing the relationship between seniority and income, a linear trend, stovepipe income and a rolling average. This relationship between seniority and income is at the heart of estimating the damages to the TWA pilots as one needs to be able to quantify the value of, for instance, being at seniority #6000 vs. #4000 under an alternate list.

For the month of July 2003, the slope of the linear trend is -0.5611, which means that the estimated change in income for moving from #6000 to #4000 is approximately \$1,122. Using the stovepipe method, where income goes up in steps rather than gradually, the estimated change in income would be \$1,714. Using the rolling average, the estimated change would be \$1,366.

In choosing an estimation methodology the stovepipe method was ruled out primarily because of its stair-step nature, which means that changes in seniority over two short distances close to each other can be zero or large depending on the stovepipe income line for the month. This means that several pilots who move 100 seniority numbers could have no change in income while several others who move the same

distance could have a change of several hundred dollars. While this would ultimately produce aggregate damages (i.e. for all pilots taken in combination) comparable to those calculated with a rolling average, it does not accurately calculate the impact to individuals. The linear average was ruled out because average income tends not to increase significantly at the junior end of the seniority list, while it rises quite dramatically at the senior end. Thus, the linear average would overstate the impact on pilots at the junior end of the list and understate them at the senior.

However, one advantage of the linear and stovepipe methods is that there is always a positive relationship between seniority and income; income never goes down as seniority goes up. This aspect of a rolling average, discussed above as volatility, has been minimized by using a relatively large number of pilots in the average (240). Additionally, the line is calculated each month and therefore volatility is minimized to insignificant levels. The entire table with the average income at each system seniority number for each period between April 2002 and June 2012 is the proxy table data in Appendix 16.⁴²

Therefore, given the rolling average as the most appropriate estimator of income, the impact (D) for any given pilot in a given month is:

$$D = (i_{sx} - i_{sa}) \times p_i$$

Where:

i_{sa} = Average Top of Scale income at actual seniority

i_{sx} = Average Top of Scale income at changed seniority

p_i = Percentage of top of scale for pilot's length of service (l)

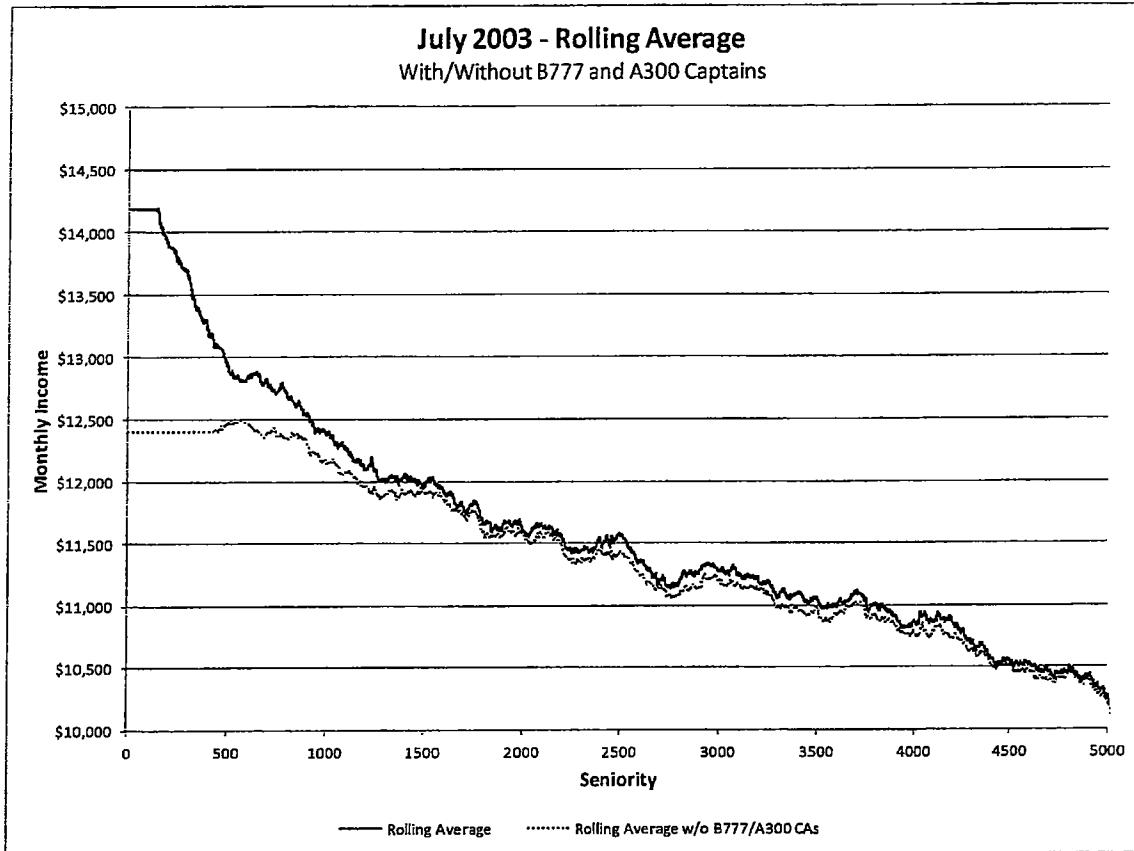
The reason the impact must be calculated this way is because of disparities in lengths of service in parts of the seniority list. A TWA pilot and an American Airlines pilot could be next to each other on the seniority list, could have the same position and fly the same number of hours yet their incomes could differ as a result of one having more years of service than the other (Pay scales at American see pilots getting annual increases in their first 12 years. Once the 12th year is reached there are no more automatic increases). Therefore, the difference in income for a 5th year pilot changing position would be less than for a 12th year pilot making the identical change in position. For this reason, the rolling average is calculated as if all pilots were at the 12th year, but when calculating the impact to an individual pilot, the amount is lowered commensurate with the pilot's length of service.

Due to the fence preventing TWA pilots from bidding into B777 and A300 Captaincies until the end of 2011, a different average income line was used to estimate impacts during the April 2002 to June 2012 period. For these months, an "unfenced average" was calculated that excluded B777 and A300 captains,⁴³ as shown in Figure 18. It will be noted that below seniority #1500, there is no significant difference between the unfenced and fenced averages. However, at the senior end of the seniority list, the two averages diverge significantly. Using the lower, unfenced average for the period when bidding restrictions are in place, with a six month buffer to be conservative, ensures that damages are not overstated.

⁴² See proxy data files with model: SUPCC.ACT

⁴³ See proxy data files with model: SUPCC.ACT.F

Figure 18



There are three exceptions to this calculation. The first exception is when a pilot would not be on furlough under an alternate list, but was under Supplement CC. In this case the impact to the pilot is the entire average income at the changed seniority number. In the opposite case, where a pilot was working but would have been furloughed under an alternate list, then the impact is the pilot's actual salary. A second exception is that when a pilot is on voluntary furlough, there are no damages attributed. Pilots may choose to take early furlough when the company announces layoffs and alternately may choose not to come back immediately when the company begins recalling. In either case, if a pilot who was actually on furlough has pilots junior to him/her who are working, I consider them on voluntary furlough and calculate no impact. The last exception is for pilots who are inactive. This is generally because they are on some sort of leave (medical, personal, maternity) or are in transition from one status to another. No impact is calculated for these pilots during periods they are inactive.

These calculations were performed for each pilot for each month from April 2002 to June 2012. As there is no actual data past June 2012, the rolling average for the last month was used to estimate future impacts from July 2012 to June 2026. The shape of the rolling average line will change substantially in the future due to wage rate bargaining, changes in the composition of the American Airlines fleet, changes in pilot

productivity (working hours) as well as increases/decreases in the number of positions. There are also many unknowns such as whether there will be a merger with US Airways and what that merged seniority list might look like. It is impossible to know what these changes will mean to the rolling average line in the future and one is therefore left with two choices: use the latest data available or make no calculations at all.

There is no doubt that better seniority for the TWA pilots would mean that they, on average, would have higher income in the future than they will under Supplement CC and therefore some estimate of those future damages has to be made. Using the assumption that American Airlines will continue to look as it did in June 2012 until 2026 is almost certainly incorrect. However, it is the one assumption that requires no accompanying assumptions. If wages rise in the future or if the workforce expands, this estimate will be conservative. If wages fall below current levels or the workforce contracts, then the estimate will be high. Due to these unknowns there are limitations on the accuracy of the calculation of future damages and therefore they have been itemized separately.

If before trial actual data for periods after June 2012 becomes available and I am requested to, I will update historical and estimated future damages. Such an update would not require any change in my methodology or assumptions.

Bidding Restrictions

An additional technical matter is related to bidding restrictions. As mentioned above, damages have been calculated under the assumption that the Supplement CC protections would provide a number of guaranteed captain positions. If a pilot is in a protected position, then increasing his seniority may not increase his income, as he is already holding a higher paying position than he would otherwise be able to hold. It was mentioned above that one method employed for ensuring that impacts are not overstated was to use a rolling average income line calculated without B777 and A300 Captains.

An additional method used was to identify pilots in protected positions and assume zero impact in the months in which they were holding positions out of seniority order. To determine which pilots to treat as holding a protected position, the threshold seniority number for being able to hold a position by dint of seniority alone was calculated as follows.

$$TH = AMR_{max} + ((AMR_{max} - AMR_{avg}) / (N_{amr}/2) * N_{twa})$$

Where

TH = Threshold seniority number for a given position

AMR_{avg} = Average AMR seniority number for position

AMR_{max} = Maximum AMR seniority number for position

N_{amr} = Number of AMR pilots in position

N_{twa} = Number of TWA pilots in position

This formula proportionally expands the American Airlines pilots' seniority range holding a given position to accommodate the positions held by TWA pilots and then uses the bottom of the expanded range as the cut-off point for considering a pilot to hold the position by seniority alone. It uses the bottom half of the seniority distribution in order to limit the effect of senior pilots opting for junior positions. Otherwise, the cut-off point would move farther down the seniority list than would likely be accurate.

In a given month, any pilot below the cut-off point on an alternative seniority list is considered to be holding their position as a result of guarantees and therefore I use the conservative assumption that there is no impact to those pilots for that month.

It's worth noting that pilots who are in the maximum position allowable under restrictions have less ability to exercise seniority for increased income. As noted above, seniority is a form of currency that pilots exchange for income and lifestyle, and that these benefits are somewhat interchangeable. A pilot who is restricted in exchanging seniority for income must therefore use it for lifestyle. For instance there is approximately \$755k in employment damages under the Salamat Damage Model attributable to pilots who were B767I Captains who were line-holders. More seniority for them would have to be used for better schedules, vacations, domicile, job classification (such as check pilot or other non-line position) or other items that would not necessarily lead to an increase in income. Therefore, the \$755k represents the monetary value of damages to lifestyle. More generically, under the Salamat Model there is approximately \$5.1M in damages attributable to pilots whose actual income was greater than two standard deviations above the estimated average income at their alternative seniority number⁴⁴. This amount represents the estimated monetary value of the loss of lifestyle under the Salamat Model. The monetary values for all models are in Appendix 20.

Inactive Pilots

There are several reasons why pilots may be listed as inactive for a particular month in the data provided by American Airlines (see abs_char tab, AA0012.xls in Appendix 17). In some cases a pilot may be getting paid by the company during these periods. In other cases the pilot may be paid by another party (i.e. Union, Insurer, FAA) based on the position the pilot holds. In yet other cases the pilot's position may have no bearing on whether, or if, the pilot receives any compensation at all. For this reason, a conservative approach has been adopted and there is no impact calculated for pilots who are inactive, with the exception of furloughed pilots.

If a pilot was on furlough during a given period but would not have been under an alternative list, then the impact to the pilot is the total lost income for the period. However, there are situations where pilots are either on voluntary furlough or have bypassed recall. During the historic period, pilots on voluntary furlough have no impact calculated for them. At the end of the historic period, there were pilot who had

⁴⁴ The assumption is that, being at the top end of the income distribution, a pilot with income greater than 2 standard deviations above the average at an alternative seniority number would be unable to exercise that enhanced seniority for additional income.

bypassed recall and were, therefore, on furlough by choice. It is uncertain whether these pilots will accept recall in the future or will resign. However, as these pilots still have the right to be recalled, and in that sense are the same as pilots who have not yet been offered recall, I have calculated damages for them as if they will return as soon as attrition will permit. These pilots have no damages attributed to them during the period they would remain on furlough.

There may be legitimate reasons why pilots were furloughed out of seniority order or bypassed recall that might conceivably entitle them to damages. In some situations a pilot may have obligations to a current employer, and therefore cannot accept recall. In others, such as when a pilot is infirm, accepting recall would involve the pilot returning to an inactive status. However, the data provided has no explanations and therefore the conservative assumption is that these pilots have mitigated their damages and it is not appropriate to calculate any damages for these pilots while they are on furlough out of seniority order.

Attrition

As was mentioned above, calculating damages for the future (from July 2012 to June 2026) was done with a different methodology to historical damages. I have already discussed how the rolling average line for June 2012 was used as the basis for estimating the impacts in the future. This assumption also means that the model assumes the number of available positions at American Airlines will remain the same as June 2012. The model runs to the end of June 2026, a point when 63% of the TWA pilots are estimated to have retired. Often these models run until all pilots have retired (2040 in this matter), but the decision in this case was to use a more conservative forecast horizon of 14 years.

Another assumption that had to be made is when pilots would retire, as this affects pensions, movement up the seniority list, total income and the number of years pilots would suffer damages. Prior to December 13, 2007, when the FAA changed the mandatory retirement age for pilots from 60 to 65, most pilots at mainline carriers worked to 60 unless they left early due to illness or misfortune. Since the change, however, there is increased attrition prior to the mandatory retirement age due to increased illness and early retirement. As a full five years has not even passed since the change, there is no historical data one could rely on for an average. To date I have used estimate average retirement ages ranging from 62 to 64, however the most common that is used in negotiations with management and when forecasting for crew planning purposes is 63. Therefore, for pilots who had not reached 60 by the date of the change, I use the assumption of retirement at 63 and pilots are assumed to cease employment on the first day of the month after turning 63.

Interest

Compound interest, as shown in Figure 19, was applied to damages from the beginning of the year they were incurred up to January 1, 2013 using the US National inflation rate as calculated from the US Department of Labor Bureau of Labor Statistics Consumer Price Index (CPI-U), found in Appendix 18. A rate of 2.5% was used for years 2012 onwards.

Figure 19 – Annual and Compound Inflation Rates

Year	Compound Rate	
	Annual Rate	to 2013
2000	3.38%	38.41%
2001	2.83%	33.89%
2002	1.59%	30.21%
2003	2.27%	28.18%
2004	2.68%	25.33%
2005	3.39%	22.07%
2006	3.23%	18.06%
2007	2.85%	14.37%
2008	3.84%	11.20%
2009	-0.36%	7.09%
2010	1.64%	7.47%
2011	3.16%	5.74%
2012	2.50%	2.50%

Future damages are discounted from the beginning of the year in which they are incurred back to January 1, 2013 using a discount rate of 2.5%.

Mitigation

Damages are reduced by income earned through substitute employment, known as mitigation of damages. Mitigation of damages for each member of the class will be calculated once the data has been collected.

Pension Plan A

The impact to pilots' pensions under the American Airlines Plan A was calculated as follows:

$$\text{PEVA} = (\text{Greater of FF} \times N \times 0.0125 \text{ and } 1,500) \times N \times P \times D$$

Where:

PEVA=Present Value of Pension Plan A

N=Number of complete years worked for American between

December 1, 2001 and November 30, 2011

L=Male life expectancy given year of pilot's year of birth⁴⁵

P=Years on pension based on retirement assumption

FF=Estimated Average of last 5 Years employment in Dec 2001-Nov 2011 period

D=2.5% discount rate factor given year of retirement, and pensionable years

This calculation is performed using expected income under the Supplement CC list and an alternate, such as the Salamat Damage Model, and the difference between the two present value calculations is the estimated impact to the pilot's Plan A pension under the alternate model. As damages are based on the difference in the rolling average at two points on the seniority list, FF under the Supplement CC list is the average income at a pilot's seniority number on that list and not his/her actual income.

Pension Plan B

The impact to pilots' pensions under the American Airlines Plan B was calculated as follows:

$$\text{PEVB}=DI \times CR \times ((1 + G)^{(YR - Y)} \times D$$

Where:

PEVB=Present Value of Pension Plan B

DI=Difference in income between Supplement CC and alternate list

CR=Contribution rate – 11%

G=Assumed growth rate of fund – 7%

Y=Year in which income is earned

YR=Year of retirement

D=2.5% discount rate factor to January 2013, given year of retirement

⁴⁵ As each pilot's gender is not stated in the data, we are using the assumption that all pilots are male. Life expectancy data is based on the US Social Security Administration, Actuarial Life Table, Period Life Table 2007, available at: <http://www.ssa.gov/oact/STATS/table4c6.html> Also used was Office of the State Actuary 2011 projected tables available at: http://osa.leg.wa.gov/Actuarial_Services/Actuarial_Information/Life_Expect_tables.htm

This calculation is performed for each year the pilot is estimated to work before retiring and summed. The difference in sums for Supplement CC and an alternate scenario is the estimated impact to the pilot's Pension Plan B under the alternate model.

Summary of Damages under different Lists

Figure 20 below has the complete breakdown of what the damages to the TWA pilots would be under the different lists that have been discussed. The analyses in Sections 2 and 3 demonstrated that the Salamat Damage Model was the most likely list to be agreed to, had ALPA pursued all the available strategies. Using a conservative assumption that there was no multiplier effect when employing several strategies, I estimated that there is a 73% probability that ALPA's violation has caused \$887,409,179 in damages to the TWA pilots and is therefore liable for \$647,808,701 in unmitigated damages.

The total damages are broken down in to three sections: Historic damages that occurred during the period for which actual data is available, forecast damages for the period between July 2012 and June 2026, and pension damages. Within the historic section, damages are broken down by type. Employment damages result from pilots being paid less under the Supplement CC integration due to lower seniority than their expected income would be under an alternative integration. Furlough damages are the result of pilots having been furloughed who would not have been under an alternative scenario. Interest was calculated for historic damages and future damages were discounted to January 1, 2013. Pension damages have present-value discounting applied in their calculation and do not, therefore, have the discount broken out separately. Damages broken down by each individual TWA pilot is included in Appendix 19.

Figure 20 – Summary of Impacts

	Figures in \$M			
	Fairness Model	Arbitrated List	Salamat Damage Model	Marginal (+200) Model
April 2002 - June 2012				
Employment Damages	(243.7)	(168.1)	(109.8)	(25.4)
Interest	(41.6)	(28.2)	(17.8)	(3.9)
Subtotal	(285.4)	(196.3)	(127.6)	(29.3)
Furlough Damages	(501.7)	(432.4)	(352.8)	(57.2)
Interest	(80.8)	(72.8)	(59.7)	(11.9)
Subtotal	(582.5)	(505.2)	(412.5)	(69.1)
Subtotal	(867.9)	(701.5)	(540.1)	(98.4)
July 2012 - June 2026				
Employment Damages	(255.1)	(200.2)	(148.3)	(32.0)
PV Discount	29.4	23.4	17.3	3.4
Subtotal	(225.7)	(176.8)	(131.0)	(28.6)
Pension				
Plan A Damages	(114.0)	(92.8)	(72.8)	(13.0)
Plan B Damages	(234.6)	(189.3)	(143.4)	(24.1)
Total	(348.6)	(282.1)	(216.3)	(37.1)
Total Damages	(1,442.1)	(1,160.3)	(887.4)	(164.1)

~

Figure 21

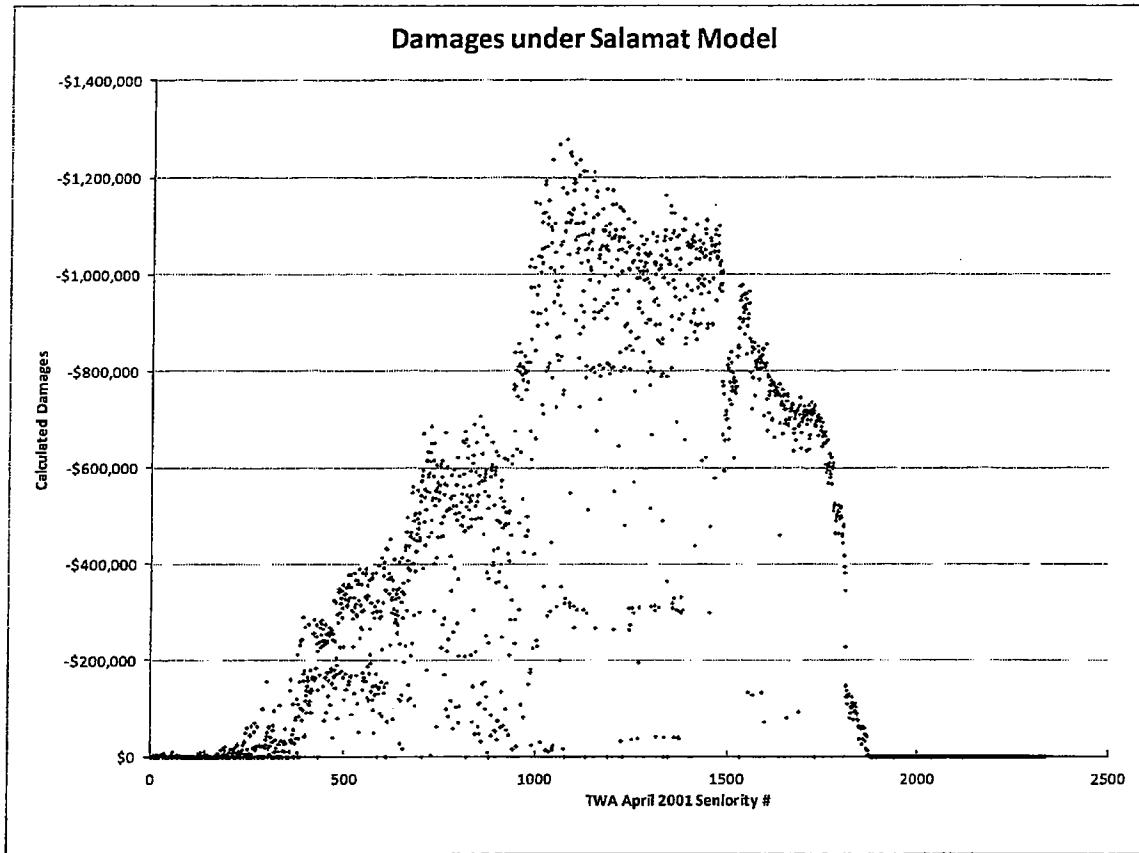


Figure 21, above, plots the damage to each TWA pilot under the Salamat Damage Model according to his/her TWA seniority number in April 2001.

Figure 22

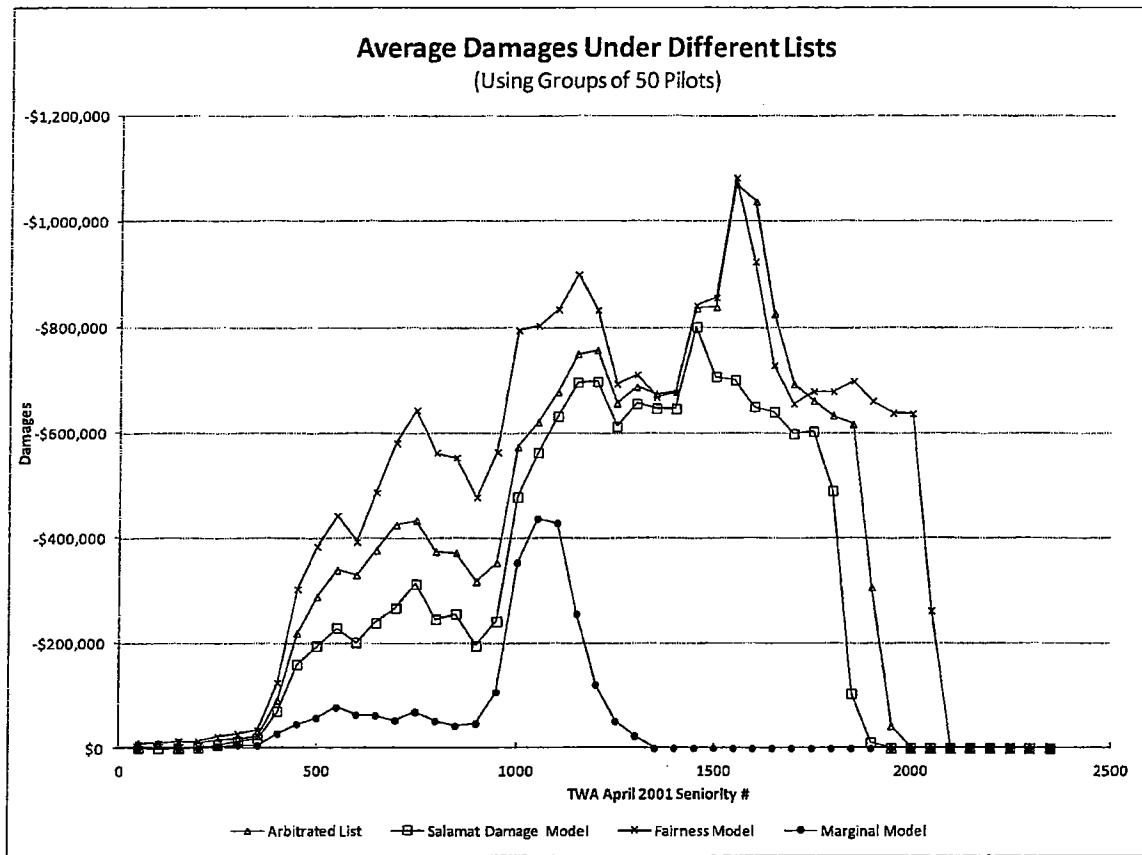


Figure 22, above, shows the average impact for each grouping of 50 TWA pilots according to their April 2001 seniority number under the four different merger models that I have discussed.

Section 5 – Conclusion

To reiterate Sycara's characterization of the negotiation process, "The interaction of the participants during negotiations engenders change in their goals, the ways they perceive the issues, their utilities associated with various outcomes and their reservation prices."⁴⁶ The foregoing analysis represents the most thorough and methodical approach to estimating how a dynamic, interactive and indeterminate process would have resulted in the absence of ALPA's violation of its duty of fair representation to the pilots of TWA. Given that estimating an alternate outcome to a negotiation is an imprecise science, I have assigned probabilities that ALPA's actions could have produced an outcome I have called the Salamat Damage Model. These probabilities total 73% and it is therefore my conclusion that this is the likelihood that ALPA's violation has caused the TWA pilots to lose income equivalent to \$887,409,179 as of January 1, 2013 and is therefore liable for \$647,808,701 in unmitigated damages. This opinion is to a reasonable degree of certainty using the methods and techniques of the theoretical frameworks discussed above.

⁴⁶ Sycara, 2009:203